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The Chileans have finished their end of the tunnel under the Andes at the Uspallata pass, and the Argentine end is expected to be completed in December, in time to enable trains to run from Buenos Ayres to Valparaiso about New Year's Day—an event of much importance for the Pacific coast of South America.

INCREASING PRODUCTION ON THE LONG ISLAND.

During the winter of 1908-9 for the first time in its history the Long Island Railroad earned its operating expenses during winter months. When Mr. Peters became president in 1905 he assumed his objective to be the undertaking to get the property out of the class of summer railways. The land near Brooklyn and about the summer resorts was largely held by speculators. In the middle of the island and easterly there is an enormous acreage of land unproductive and generally covered with jack pine and scrub oak. If this region could be made productive and support human life it would bring

traffic to the railway. Of course the truck farmer will haul his product to the market if the drive does not occupy more than one night, that is, the limit of steam hauling is perhaps something like 30 miles. For distances from market much greater than this the railway will have a chance to bid for this traffic; nevertheless, Mr. Peters knew that if the land was made productive the needs of inhabitants would provide a good deal of traffic for his road.

He went at the subject rationally to find out what profit, if any, a truck farmer could make. He bought 17 acres of cheap land at Wading River, cleared, grubbed, plowed and enriched it thoroughly but economically, and kept an exact account of all costs. He proved—and this may be called Exhibit A—that an industrious man, who knew how, could make a profit on land of that cost after paying both himself and his wife a fair price for work done. Later he proved—and this may be called Exhibit B—that there is yet an undeveloped market for finer garden products for which there is an eager demand at high prices, with an accompanying large profit to the truck farmer.

After the success of the experiment station at Wading River was assured he bought another plot of 70 acres, at almost the geographical center of Long Island. These experiment stations have received this autumn 24 first prizes, 23 second prizes and six third prizes from the fairs at Riverhead, the American Institute at New York and the Huntington Agricultural Exhibit.

Aside from producing these results of the experimental station the Long Island company has published fortnightly an interesting and valuable leaflet giving in full detail all that has been learned of agricultural possibilities of Long Island soil. The result both of the experiment stations and of this exploitation has been, first, a marked improvement in the quantity and quality of agricultural product, and second, that hundreds of settlers have been induced to come and establish market garden farms on Long Island.

The Harriman lines have a problem in some respects curiously like that of the Long Island. In Oregon and California especially, there are great areas scarcely settled at all, which could be made to blossom like the rose if farmers could be brought in. The method employed in this case has been the ingenious one of distributing widely what are known as "community pamphlets," which take up the special attractions offered settlers by each one of a large number of points on the company's lines. In preparing these community pamphlets the company has been able to secure full co-operation from the communities themselves. The communities furnish the information and pay the cost of preparing the pamphlet. Then the Southern Pacific photographers and pamphlet makers prepare a thoroughly artistic and fascinating description of the locality, including a map of the railway system on which the community is shown as if it were the one metropolis towards which all lines converged. We have before us a community pamphlet of Grant's Pass, Ore., in which Grant's Pass is shown on the map in type four times as large as that used for San Francisco, while the rates to Grant's Pass are quoted from a hundred interior points. The effect of these pamphlets has been pronounced in inducing migration from Indiana, Illinois, Minnesota, Iowa, Missouri, Nebraska and Kansas to the fertile country west, and the very fact that the communities pay the greater part of the cost of preparing the pamphlets makes them warm allies of the railway, since it is apparent to all that the communities and the railways are working in partnership, side by side.

If, with the completion of the Thirty-fourth street tunnels and the perfection of the transit system on the western end of the island, this part of Long Island can be made a vital portion of the residence district of New York, and if the eastern end of the island can be developed up to the possibilities of its very fertile soil, the Long Island should take its place as an exceedingly profitable year-round road, instead

of a road which has to pay for seven dull months in five lively ones. Eastern Long Island needs settlers nearly as badly as Oregon does, and Mr. Peters on Long Island, like Mr. Stubbs and Mr. McMurray, in Oregon, is working in a very effective way to get them.

WHAT IS A REASONABLE RATE?

The main purpose of government regulation of rates is to have reasonable rates determined by public authorities and substituted for unreasonable rates fixed by railway traffic men. A rate may be unreasonable for either or both of two reasons. It may be unfairly discriminatory; or it may be excessive; or it may be discriminatory and excessive. Many of the qualities that will make a rate unfairly discriminatory have been settled by the federal courts. But, while commissions and courts frequently render decisions that certain railway rates or schedules of rates are unreasonable because excessive, one will seek in vain for a clear, comprehensive, final ruling in a railway case on what makes a rate or schedule excessive. A direct, conclusive ruling on this point by the Supreme Court of the United States is much needed. There will be chronic misunderstanding, friction and struggle between railways, regulating authorities and shippers until the question is settled. It is the vital issue in the great rate battle that is being fought in the West. It is the main issue in most of the current controversy about rates.

There are two theories on the subject. One is that reasonable rates are rates that will yield the railway a "fair return on the fair value of its property," and no more. The current rate of interest is thought by many a "fair return." The other theory was stated as follows by C. F. Dillard, commerce counsel of the Harriman Lines, in questioning a witness in the Salt Lake rate case: "A reasonable rate is one on which traffic moves freely, which allows a fair profit to the producer and to the distributor, and puts the product in the hands of the consumer at a price not unduly high." The former, of course, is the "cost of service" theory; the latter, the "value of the service" theory. The cost of service theory looks at the aggregate net earnings of the railway, and at its entire schedule of rates, and judges of the reasonableness of the latter by the size of the former. The value of the service theory looks at the individual rates, and judges their reasonableness by their effect on the movement of traffic, on the business of the various shippers and on the industry and trade of the community. The main test of reasonableness under the former theory is how much money the rates enable the railway to make. The main test of reasonableness under the latter theory is how much of a burden the rates impose on the railway's patrons.

We have frequently discussed the economic phases of these two theories. We propose to glance here at their legal phases. The decision of the Supreme Court of the United States in the Nebraska rate case (*Smyth vs. Ames*), rendered in 1897, seems to favor the cost of service theory. Said Justice Harlan, who wrote the opinion: "We hold, however, that the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. * * * What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience." The quotation is so familiar as not to require to be given in full. It has been argued by the advocates of the cost of service theory that this justifies and authorizes so regulating the rates of a railway as to restrict its profits to the current rate of interest. Anything that it may be allowed over this is conceded, it is argued, as a matter of grace, not as a matter of right.

There are later decisions which appear to show that the court intended no such construction to be put on its language.

The most important is that in the case of *Cotting vs. Godard* (183 U. S. 79), decided in 1901. Justice Brewer wrote the opinion. The action of the legislature of Kansas in passing a law to reduce the charges of the Kansas City Stock Yards Company was attacked. Justice Brewer quoted at length, and with approval, from opinions both of the Supreme Court and of English courts in several cases involving the question of the reasonableness of the charges of concerns engaged in various kinds of public service. He referred to the statement of the Supreme Court in the case of *Covington & L. Turnpike Road Co. vs. Sanford*, in which it said: "So that the right of the public to use the defendant's turnpike upon payment of such tolls as in view of the nature and value of the service rendered by the company are reasonable is an element in the general inquiry whether the rates established by law are unjust and unreasonable." He quoted the language in *Smyth vs. Ames*, above referred to. He quoted the statement of the Supreme Court in the *San Diego Land & Town Co. vs. National City* (a water rate case), that "the basis of calculation suggested by the appellant is, however, defective in not requiring the real value of the property and the fair value in themselves of the services rendered to be taken into consideration." Summing up past decisions, he said:

"As to parties engaged in a public service, while the power to regulate has been sustained, negatively the court has held that the legislature may not prescribe rates which if enforced would amount to a confiscation of property. But it has not held that the legislature may enforce rates that stop only this side of confiscation. * * * It has declared that the present value of the property is the basis by which the test of reasonableness is to be determined, although the actual cost is to be considered, and that the value of the services rendered to each individual is also to be considered."

Proceeding, he condemned the action of the lower court in basing its findings as to the reasonableness of the rates fixed by the legislature on the aggregate profit that they would yield to the company, and said:

"If he (the individual discharging a public service) has a thousand transactions a day, and charges in each but a reasonable compensation for the benefit received by the party dealing with him, such charges do not become unreasonable because by reason of the multitude the aggregate of his profits is large. * * * He has a right to charge for each separate service that which is reasonable compensation therefor, and the legislature may not interfere simply because out of the multitude of his transactions the amount of his profits is large."

"Such was the rule of the common law, even in respect to those engaged in a quasi-public service, independent of legislative action. * * * In *Canada Southern v. International Bridge Company*, Lord Chancellor Selborne thus expressed the decision of the House of Lords:

"It certainly appears to their lordships that the principle must be, when reasonableness comes in question, not what profit it may be reasonable for a company to make, but what it is reasonable to charge to the person who is charged. That is the only thing he is concerned with. * * * Here we have got a perfectly reasonable scale of charges in everything which is regarded as material to the person against whom the charge is made. * * * That being so, it seems to their lordships that it would be a very extraordinary thing, indeed, unless the legislature had expressly said so, to hold that the persons using the bridge could claim a right to take the whole accounts of the company * * * and * * * to ask the court to say that the persons who have projected such an undertaking as this * * * are to be regarded as making unreasonable charges, not because it is otherwise than fair for the railway company using the bridge to pay those charges, but because the bridge company gets a dividend which is alleged to amount, at the utmost, to 15 per cent. Their lordships can hardly characterize that argument as less than preposterous."

"The authority of the legislature to interfere by a regulation of rates," continued Justice Brewer, "is not an authority to destroy the principles of these decisions but simply to enforce them. * * * The question is always not, What does he make as the aggregate of his profits? but, What is the value of the service which he renders to the one seeking and receiving such services? Of course, it may sometimes be * * * that the amount of aggregate profits may be a factor in considering the question of reasonableness of the charges, but it is only one factor, and is not that which finally determines the question of reasonableness."

The decision was by a unanimous court. *Cotting vs. Godard* was not a railway rate case. But the reasoning seems plainly applicable to such cases. There may seem to be an inconsistency between the holdings in *Smyth vs. Ames* and *Cotting vs. Godard*. But the inconsistency is apparent, not real. One

of the principles earliest established in cases of this kind was, that for a legislature or commission to fix rates that deprived a public service corporation of all, or practically all, profit on its investment was an unconstitutional taking of its property, because without due process of law or just compensation. When other cases came up involving confiscatory rates this principle alone was applied because it was not necessary to determine whether rates fixed by a railway were reasonable, when it already had been shown that rates substituted for them by public authority were confiscatory. But a different issue was presented in *Cotting vs. Godard*. The rates which the stock yards company itself made yielded it an aggregate profit of 11 per cent. The legislature of Kansas thought this was too much and fixed rates which would yield a profit of 5.3 per cent. It could not be held that this was absolute confiscation of the property. If it was unconstitutional it was on some other ground. The court, as we have seen, held that it was unconstitutional, the ground being that the stock yards company had a right to make reasonable charges; that the main test of the reasonableness of charges was the value of the services rendered to the persons receiving the services, not the profits earned by the concern rendering them; that the rates fixed by the company, measured by this criterion, were reasonable; and that as long as they were reasonably proportionate to the value of the service rendered no public authority had a right to reduce them, even though the profits earned by the company in the aggregate were unusually large.

Numerous reductions in railway rates have been asked for by shippers and travelers, or actually required by legislatures and commissions, during the past two years, not on the ground that they were excessive for the services rendered, but on the ground that the roads were making too much money. The roads usually are trying to meet the issue by seeking to prove that they are not earning more than a "fair return on the fair value of their property." This seems to be a serious tactical mistake. It is a good way to win a battle and lose a campaign. It is a good way to win a few rate cases now and get the cost of service principle so firmly fixed in the law as to cause many cases to be lost in future and rates to be regulated permanently on principles that will be disastrous to railways and public. We believe we speak the words of truth and soberness when we say that the railway counsel who shall present the issue of rates based on value of the service *versus* rates based on the cost of the service to the Supreme Court of the United States so as to get an explicit decision in favor of the former will confer as great a benefit, not merely on the railways, but on the American people, as there is to-day opportunity for an American lawyer to confer.

THE ELECTRIFICATION OF STEAM LINES IN CHICAGO.

Following the decision of the Illinois Central directors and stockholders not to consider the immediate electrification of this road's Chicago terminals, the transportation committee of the city council has prepared an ordinance which is intended to compel the electrification of all railways entering the business portion of the city within a time limit. The preliminary draft of the ordinance does not specifically require electrification, but states that some motor other than steam locomotives must be used. It requires that within six months after approval each railway shall submit plans and specifications for the operation of its cars within the prescribed zone, and that after January 1, 1912, every Chicago road shall be operated by some other power than steam locomotives within that zone.

President Harahan's report, which we print elsewhere, states that the subject of the electrification of the Chicago terminal of the Illinois Central has been thoroughly investigated during the past year, and gives an estimate of the cost of the electrification of the entire suburban service and the

economic results to be expected, as compared with those from the present steam operation. While no detailed figures are given, the principal ones may be compared with those prepared for the city council's committee on local transportation. The Illinois Central report estimates the cost of the electrification of the entire suburban service at \$8,000,000, which includes the power-house, necessary changes in tracks to avoid grade crossings, and various betterments, which, while not actually necessary, it would be advisable to make if a change in the method of operation should be adopted. The total cost of suburban electrification as given in the report of the city's engineers is \$3,356,931, not including power-house. The city has evidently given a minimum figure and the railway a maximum. Taking account of interest and depreciation each at 5 per cent. and the present cost of steam operation, the railway estimates the loss in operation by electricity at \$624,947 per year, while the city's engineers estimate a net saving due to electrification of \$264,097 per annum. Such a wide difference must lead to action at law, where unbiased expert testimony will be forthcoming if the proposed city ordinance is to be enforced.

The power station for suburban traffic would have approximately a capacity of 15,000 kw. and at \$100 per kw. would cost, approximately, \$1,500,000. Another item of \$1,500,000 can be taken in the cost of betterments and changes in tracks due to elevation and removal of grade crossings which would be made in the ordinary course of events, regardless of electrification. These changes are necessary, and they would, to a considerable extent, reduce the cost of operation; at all events, they need not be included as portion of the cost of electrification. Thus, deducting \$3,000,000 from the \$8,000,000 given above, there remains an expenditure of \$5,000,000 for the electrification of the suburban lines. But one of the most characteristic features of electrification, as seen in this office, is that it always costs a good deal more than the highest preliminary estimate. Frankly, we have not much confidence in the engineer's figures, and we are inclined to think that ultimate capital costs would run materially higher than the present estimate.

The Illinois Central can buy power, if it wants to, and avoid building power houses. On the day when President Harahan made his report, Samuel Insull, president of the Commonwealth Edison Company, made the statement at a meeting of the Chicago Electric Club that his company had ample surplus capacity in its power-houses to supply current for the electric operation of the Chicago terminals of any two of the large steam lines, and that this current could be furnished at a lower cost than obtains in any other large city in the world. It will be remembered that the two English companies which have been making history with regard to electrification during the last five years, have pursued different methods in obtaining their power. The Lancashire & Yorkshire has built its own power-houses to supply the current used in operating its Liverpool-Southport line. The North Eastern, on the other hand, operating electrically in the Newcastle district, buys its power, and believes it has the better bargain.

But the cost of the current is only a small item in the charges attending electrification. It may be accepted as conclusively demonstrated that the New York Central and the New York, New Haven & Hartford are moving trains by electricity more economically than they moved them by steam in their suburban district. To enable this to be brought about, however, extremely heavy capital costs had to be assumed, just as they will have to be assumed in Chicago, if the railways entering the city electrify their terminals, and the charges on these capital costs make the entire operating cost, including overhead charge, far higher than it used to be in the days of steam operation. For example, a standard express train of eight cars on the New York, New Haven & Hartford pulls out of the Grand Central station headed by two half-unit

electric locomotives, each of which cost very nearly \$40,000. The capital cost of the motive power of this train is in excess of \$75,000—a sum sufficient to supply it with four heavy Atlantic type locomotives—and the cost of the interest on this investment is just as surely a part of the operating expenses as the train crew's wages. The cost of the motive power at the head of a standard New York Central passenger train operated by electricity is just about half this sum, but is great enough to pay for two Atlantic type locomotives. Moreover, it will be recollected that Mr. Wilgus, while in charge of the transition from steam to electricity at the New York terminus, estimated that the direct costs of electrical equipment represented only one-fourth of the total charges attendant upon electricity. The cost of making everything ready and safe for this kind of operation is far greater than the highest estimates are apt to contemplate.

We concur entirely in President Harahan's point of view, as set forth in his report; that in the present state of the art he could not hope to save any money by electrifying his terminal, and would instead have largely increased costs. There is, however, another side to this question. Mr. Aspinall, of the Lancashire & Yorkshire, pointed out some years ago that the primary object of electrification is to make money, not to save money. It is unquestionably possible to handle a greater number of passengers in and out of a terminal operated with electricity than can be handled in and out of a terminal operated by steam. The Park avenue tunnel, constituting the throat of the northern passenger movement out of New York, had substantially reached its capacity in steam operation at the time of the electrification of the lines; that capacity has now been enormously increased and is nowhere near its limit under operation by electricity. The time will probably come in the history of all great cities when it will be cheaper to electrify terminal lines than to acquire the necessary land required if steam operation of the suburban service is to be continued. But we doubt if that time has yet come to Chicago. Meantime, the railways may as well make up their minds to the fact that the municipal authorities will be quite likely to force their hands and make them electrify before it is economical to do so.

CHICAGO, ROCK ISLAND & PACIFIC.

The position of the Chicago, Rock Island & Pacific Railway is different indeed now from what it was at the time of the publication of the annual report for 1908. Not only has the fiscal year ended June 30, 1909, been far more prosperous from the point of view of earnings than was 1908, but during the past year the company has greatly improved its credit by a readjustment of its finances.

There were due April 1, 1909, \$6,000,000 collateral trust notes. These were paid at maturity. The balance sheet of June 30, 1908, showed \$4,600,000 first and refunding mortgage bonds pledged against notes payable, and bonds unpledged in the treasury to the amount of \$14,900,000. This included \$3,700,000 first and refunding bonds of the Chicago, Rock Island & Pacific Railway. The floating debt, as represented by notes payable, amounted in 1908 to \$3,500,000, and there were also unpaid vouchers and drafts totaling \$4,500,000. During the past year the company was able to sell both the first and refunding mortgage bonds pledged against the notes payable and those unpledged in its treasury, a total of \$8,000,000. Profit and loss account shows discount commissions and expenses on stocks and bonds issued and sold, and expenses on option canceled, of \$1,600,000. The sale of approximately \$8,000,000 of its own bonds, and also apparently of some of the securities of other companies held in the treasury free, enabled the Rock Island to pay off about \$2,000,000 of the notes payable, leaving on June 30, 1909, \$1,600,000 of these notes, and to pay off also about \$1,800,000 unpaid vouchers and drafts, leaving on June 30 about \$2,650,000 of these un-

paid. In 1909 total current assets amounted to \$28,900,000, of which \$3,200,000 was cash. Total current liabilities amounted to \$11,960,000. The company shows a decrease of \$3,300,000 in current liabilities and a decrease of \$9,300,000 in current assets, but as a matter of fact most of the reduction in current assets comes through a sale of bonds held in the treasury, and it was the question of whether the company would be able to sell these bonds at an acceptable price that had much to do with the company's poor credit in 1908.

The earnings were much more encouraging than in 1908. Total operating revenue amounted to \$61,200,000 in 1909 as against \$58,500,000 in 1908. Operating expenses amounted to \$42,500,000 in 1909 and \$42,100,000 in 1908. This left net operating revenue, before the payment of taxes, of \$18,700,000 last year as against \$16,300,000 in the previous year, so that after the payment of interest and dividends the company had a surplus of \$2,200,000 in 1909 as against \$790,000 surplus in 1908.

The holding down of operating expenses during a year of increased business is all the more to be commended because by far the greatest saving is made in cost of conducting transportation. This cost was \$23,600,000 in 1908 and was reduced to \$22,800,000 in 1909. Put differently, transportation expenses absorbed 40.36 per cent. of total operating revenue in 1908 and but 37.34 per cent. in 1909. Maintenance of way and structures cost \$9,050,000 in 1909 and \$8,080,000 in 1908. Maintenance of equipment cost \$7,500,000 in 1909 and \$7,400,000 in 1908. The following table shows the unit costs of maintenance:

	1909.	1908.
*Maintenance of way	\$976	\$879
†Repairs per locomotive	2,391	2,252
“ “ passenger-train car	830	727
“ “ freight-train car	71	72

*Per mile of first, second, third, etc., track operated, two miles of siding and switch tracks being counted equal to one mile of main track.
†Repairs, renewals and depreciation are all included in this figure, since the company, while using in general the classification of revenues and expenses as prescribed by the Interstate Commerce Commission, does not give separately repairs, renewals and depreciation of its equipment.

Revenue shows the effect of improved business conditions in the territory served by the Rock Island. Freight revenue amounted to \$39,200,000 last year, an increase of \$1,300,000, or a little over 3 per cent., over the previous year. The total number of tons of freight carried one mile was 4,160,000,000 in 1909 and 4,019,000,000 in 1908. The average revenue per ton per mile was exactly the same in the two years, namely, 0.94 cents. The average haul per ton was 243 miles last year, a decrease of 10.5 miles from the previous year. Total passenger revenue amounted to \$17,900,000 in 1909, an increase over 1908 of \$1,200,000, or 7 per cent. The total number of passengers carried one mile was 953,000,000 in 1909 and 882,000,000 in 1908, the average revenue per passenger per mile being 1.88 cents in 1909 and 1.89 cents in 1908. The average distance each passenger was carried was 51 miles last year and 52 miles the year before.

In 1908 the Rock Island was particularly unfortunate in its lack of operating efficiency. This has been remedied to a considerable extent, and while the number of ton-miles increased the freight-train miles decreased by 196,000 last year, being 14,900,000 in 1909. Loaded freight-car mileage was 275,000,000 in 1909, an increase of 12,500,000, while empty freight-car mileage totaled 108,000,000 in 1909, a decrease of 6,000,000. Naturally the train-load increased, being 265 tons in 1909 against 255 tons in 1908.

Of the total tonnage of freight carried products of agriculture furnished 25 per cent., animals and animal products 7.76 per cent., products of mines 29.30 per cent., products of forests 12.57 per cent., products of manufactures 18.14 per cent., and merchandise and miscellaneous 7.23 per cent. The greatest increase in tonnage during the year was in the products of mines, both the tonnage of bituminous coal and the tonnage of stone and like articles increasing considerably.

The property of the company is in good shape for the part

of the country in which it lies—the Middle and Southwest. Of the main line 73 per cent., exclusive of branches, is laid with 80-lb. or heavier rails, and 24 per cent. is rock ballasted and 34 per cent. ballasted with gravel. There was spent for additions and improvements and charged to capital account \$2,600,000. This is, of course, in addition to the increase in cost of maintenance of way previously mentioned. There was considerable work done on the roadbed, as shown by the detailed account of maintenance of way. There was spent \$100,000 on ballast in 1909. This is one and a half times as much as was spent in 1908, and \$2,000,000 was spent for ties. This is 61 per cent. more than was spent in 1908.

In President Winchell's general remarks there are some points of interest not connected directly with earnings or expenses. Among them is the statement that at the close of the year the telephone system of train despatching had been installed on 419 miles of line at a cost of \$33,000, and authority has been given for the extension of the telephone system over 181 miles additional. Whether or not a reduction of 5 per

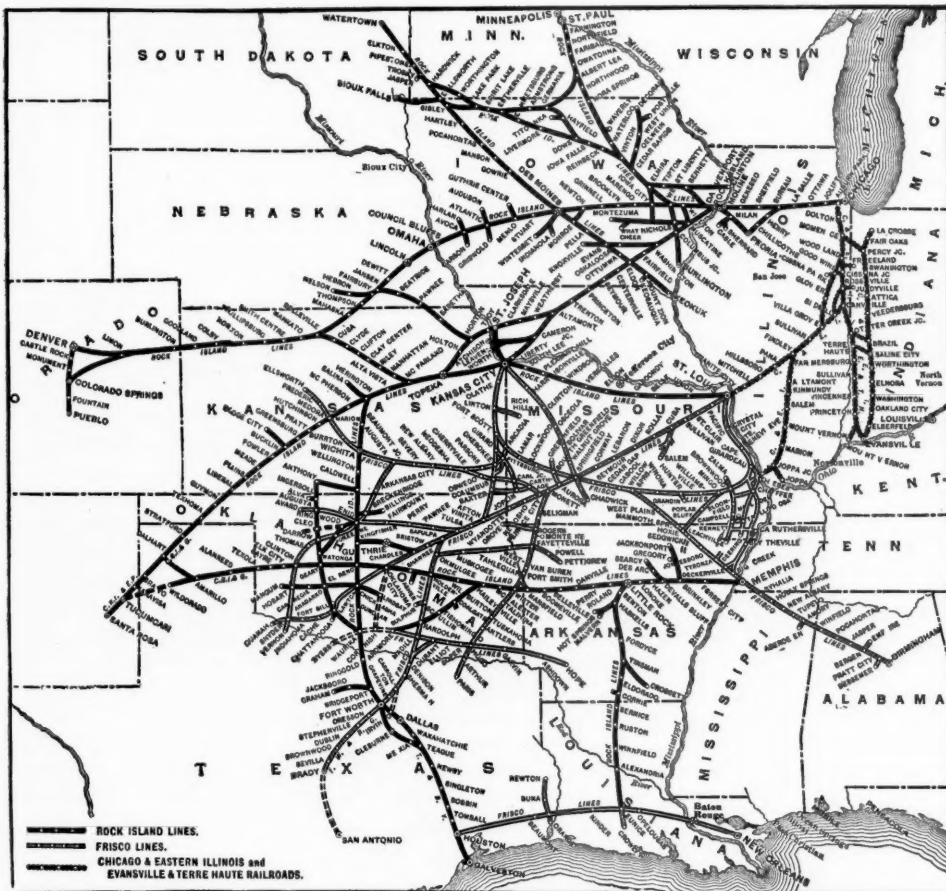
Maintenance of equipment..	7,512,889	7,358,590
Traffic	1,441,215	1,486,474
Transportation	22,848,052	23,600,342
Total operating expenses.....	42,513,495	42,136,180
Taxes	2,270,865	1,785,895
Operating income	16,400,527	14,558,122
Gross corporate income	16,611,998	14,686,756
Net corporate income	6,166,231	4,718,102
Dividends	3,930,019	3,929,785
Surplus	2,236,212	788,317

ST. LOUIS & SAN FRANCISCO.

In commenting on the report of the Frisco for the fiscal year ended June 30, 1908, we said that the current problem of such a road as this, running through rapidly developing territory, was to tide over the bad times, if that could be done, the company was assured of ultimate prosperity. The "tiding over" was done in 1908 and in the first half of the fiscal year ended June 30, 1909, and now the Frisco has apparently definitely entered the period of prosperity. Like the Chicago, Rock Island & Pacific, it has not only had to contend with decreased gross earnings and increased cost of operation, but

also with a debt which threatened to get out of hand at the very time when it was particularly hard to raise new railway capital. Moreover, the tax increases by southwestern states have been unreasoning and vexatious. But the greatly increased business and wealth in the territory through which the Frisco runs took care of the necessary return to greater earnings, and increased operating efficiency on the part of the management and employees made it possible to reduce expenses when handling the greater business.

It was due to Speyer & Co., New York, that the company was able to pay off maturing obligations and to so arrange its debt that it is now in a manageable form. This was done by the purchase by Speyer & Co. of the greater part of \$35,000,000 general mortgage 5 per cent. bonds sold by the company and the sale by the company of \$2,000,000 three-year collateral trust 5 per cent. notes of 1908. Not long ago it was announced that about \$10,000,000 of the Speyer bonds had been sold in France by the bankers, and it is now understood that arrangements for the sale of part of the remainder have been made with bankers in Germany. Naturally the funding of



Rock Island System Lines.

cent. in the cost of operation of telegraph and telephones in conducting transportation is affected at all by the extension of the system of train despatching by telephone is, of course, impossible to say definitely.

The increase of nearly 27 per cent. in taxes, as shown in the table at the end of this review, is caused, President Minchell says, by the fact that last year was the first in which Oklahoma, as a state, assessed taxes, and in New Mexico, because railways are not assessed taxes until after they have been in operation five years, only about half as much was paid in the fiscal year ended June 30, 1908, as in the 1909 year.

The following table compares the results of operation in 1908 and 1909:

	1909.	1908.
Average mileage operated....	8,026	7,970
Freight revenue	\$39,158,053	\$37,899,356
Passenger revenue	17,883,379	16,693,110
Total operating expenses.....	61,184,887	58,484,197
Maintenance of way	9,051,830	8,078,036

the large floating debt and the payment of maturing obligations were expensive. There is \$4,800,000 discount on bonds carried in suspense to be charged out in annual instalments, and last year the company charged to profit and loss \$500,000 as the annual proportion of discount on securities sold. With the proceeds of the sale of these securities and with surplus earnings the company paid off \$10,300,000 notes payable, added \$351,000 to its cash in the treasury, bringing the total up to \$700,000, and paid off mortgage obligations falling due amounting to \$16,900,000.

Total operating revenue amounted to \$38,200,000 last year, an increase of \$2,400,000, or 6.7 per cent., over the previous year. Revenue from freight amounted to \$25,600,000, being \$1,600,000, or 6.9 per cent. more than in 1908. The number of tons carried one mile was 2,539,500,000 in 1909 and 2,465,900,000 in 1908. The average haul per ton was 155.5 miles

in 1909 and 161.4 miles in 1908. The average revenue per ton per mile was 1.01 cents in 1909 and 0.97 cents in 1908.

Passenger revenue amounted to \$9,700,000 in 1909, an increase of \$730,000, or 8.2 per cent. over 1908. The number of passengers carried one mile was 469,500,000 in 1909 and 414,200,000 in 1908. The average length of journey was 44.26 miles in 1909 and 49.14 miles in 1908, and the average revenue per passenger per mile was 2.07 cents in 1909 and 2.15 cents in 1908.

The gain in operating efficiency is shown by the fact that loaded freight cars moved one mile amounted to 150,000,000, an increase of 6,500,000 over 1908, while empty freight cars moved one mile totaled 62,600,000, a decrease of 9,000,000 from 1908. The average train load was 220 tons last year and 212 tons the year before.

With the better results of operation, expenses were held down, and transportation expenses in particular were decreased. There was spent \$13,400,000 for conducting transportation last year as against \$13,700,000 the year before. This took but 34.81 per cent. of gross revenue last year as compared with 38.16 per cent. the year before.

The most noticeable increase in expenses for maintenance of way is an increase of \$560,000, or 69 per cent., in the amount spent for ties. The sum spent in 1909 was \$3,400,000. There was a great saving in yard expenses, as shown in the detailed list of transportation expenses. For instance, yard conductors and brakemen were paid \$524,000 in 1909, which is less by \$112,000, or 17.57 per cent., than in 1908. Yard enginemen were paid \$298,000 in 1908, which is less by \$58,000, or 16.36 per cent., than in 1908. Water for yard locomotives cost \$19,000 last year, which is less by \$11,000, or 35.73 per cent., than in 1908.

Maintenance of way cost \$5,100,000 last year and \$4,700,000 the year before. This is an increase of 9 per cent. Maintenance of equipment as a whole cost \$4,600,000 in 1909, or slightly more than in 1908. Taxes, over which the company could exercise no control, increased 63 per cent., being \$1,500,000 last year. The following table compares the unit costs of maintenance:

	1909.	1908.
*Maintenance of way	\$849	\$809
†Repairs per locomotive	2,604	2,205
" " passenger car	612	685
" " freight car	54	54

*Per mile of first, second, etc., track, two miles of siding and switch tracks, being counted equal to one mile of main track.

†Repairs, excluding renewals and depreciation.

The point always to be borne in mind when considering the prospects of the St. Louis & San Francisco is the great possibilities of the country through which it runs. In 1909 there were located 327 industries along the lines of the company. These industries employ 8,710 men and their plants cost in the aggregate \$7,300,000. President Davidson estimates that these new industries will load in and out over 80,000 carloads per year. Last year was a good year for agriculture also on the lines of the Frisco. The tonnage of products of agriculture form between 15 and 16 per cent. of the total tonnage carried, and last year these commodities furnished 2,600,000 tons as against 2,300,000 tons the year before. The Frisco is a great lumber road. In 1909 it carried 3,700,000 tons of products of forests as against 3,100,000 tons in 1908, and this tonnage was 22.74 per cent. of the total last year and 20.19 per cent. the year before. There is almost no anthracite coal carried, but there were 4,600,000 tons of bituminous coal carried in 1909 and 4,800,000 tons in 1908. The tonnage of manufactures carried in 1909 was 2,200,000, or 13.24 per cent. of the total tonnage, and 2,100,000 tons, or 13.64 per cent. of the total tonnage in 1908.

There is not a great deal of general discussion of affairs of the company in the president's report, but he mentions the agreement dated February 15, 1909, with the Louisiana Railway & Navigation Co. for trackage rights from Baton Rouge,

La., into New Orleans, 77 miles, which gives the Frisco the shortest route from Houston, Tex., to New Orleans.

The following table compares the results of operation in 1908 and 1909:

	1909	1908.
Average mileage operated	5,251	5,064
Freight revenue	\$25,618,876	\$23,976,297
Passenger revenue	9,655,886	8,927,037
Total operating revenue	38,195,738	35,806,132
Maintenance of way	5,094,616	4,671,416
Maintenance of equipment ..	4,638,516	4,559,107
Traffic	894,874	833,679
Transportation	13,294,084	13,663,633
Total operating expenses	25,164,014	25,007,286
Taxes	1,544,604	948,415
Operating income	11,487,119	9,850,432
Gross corporate income	12,896,911	11,313,350
Net corporate income	1,328,585	459,066
Dividends	199,742	199,742
Surplus	1,128,843	259,324

NORTHERN PACIFIC.

During the past three years the Northern Pacific spent for grade revision, improvements and additions and betterments \$45,700,000, and charged this sum to capital account. This is in addition to \$32,000,000 advanced during the same time for construction of new lines. In these past few years the Northern Pacific has been rebuilt in part, the work being of the heaviest kind, and now, just at the time when it will have to meet the competition of the Chicago, Milwaukee & St. Paul's Pacific coast extension, it is in fine physical shape.

Besides rebuilding its own line, the Northern Pacific has backed a number of construction companies which are building new branch lines or cut-offs. The most important of these new lines is the Spokane, Portland & Seattle, being built jointly with the Great Northern. Of this road, which runs from Portland to Spokane, with branches 415 miles, the lines east of Pasco, Wash., aggregating 186 miles, were turned over for operation in May, 1909. The road is now in operation from Portland to Spokane. Last year \$2,400,000 was advanced to the Spokane, Portland & Seattle and \$4,200,000 to the Clearwater Short Line. The balance sheet shows that a total of \$37,800,000 has been advanced to construction companies. The first of these advances was made in 1906 and amounted in that year to \$5,600,000.

In the fiscal year ended June 30, 1909, the Northern Pacific earned \$68,500,000 from operation. The operating expenses amounted to \$38,000,000. These figures compare with \$68,200,000 earned in 1908 and expenses of \$39,800,000. This left, after the payment of taxes, operating income of \$28,300,000 in 1909 and \$26,300,000 in 1908.

The freight revenue, which amounted to \$47,000,000 in 1909, was greater by about 1.4 per cent. than in the previous year. The number of tons carried totaled 16,800,000, an increase over the previous year of 6 per cent.; but the average haul was 313 miles as against 326 miles in 1908, and the average receipts per ton per mile were 0.895 cent in 1909 and 0.9 cent in 1908.

Passenger revenue last year totaled \$17,300,000, a decrease from the previous year of 4.43 per cent. The number of passengers carried was 8,400,000 in 1909, being 6.65 per cent. more than in 1908, but the average number of miles each passenger was carried was 91 in 1909 and 101 in 1908. This is a decrease in the average haul of 9.42 per cent. Not only does the Northern Pacific show a shorter haul for both freight and passengers, especially for passengers, but this shorter haul seems to be quite general with most roads whose reports have been made public to date. It is quite noticeable, for instance, in the Union Pacific report commented on elsewhere in this issue. It may be possible to explain the shorter passenger haul on some lines by the fact that in 1908 there was a large number of foreign laborers scattered over the country who, when times became hard, returned to their own countries. The carriage of these laborers, traveling all the way from the West, for instance, to the Atlantic coast, would tend

to make the average passenger haul extraordinarily long. This is not, however, the explanation for the decrease in passenger haul on the Northern Pacific, because the haul in 1907 was three miles longer than in 1908, and the haul in 1906 was about seven miles longer than in 1907.

Maintenance of way cost \$7,800,000 last year. This is 10.45 per cent. less than in 1908. Maintenance of equipment cost \$7,800,000, or 8.48 per cent. less than in 1908. Conducting transportation cost \$20,300,000. This is \$400,000 less than was spent in 1908.

The cost of repairs of locomotives, cars, etc., is not given in the report.

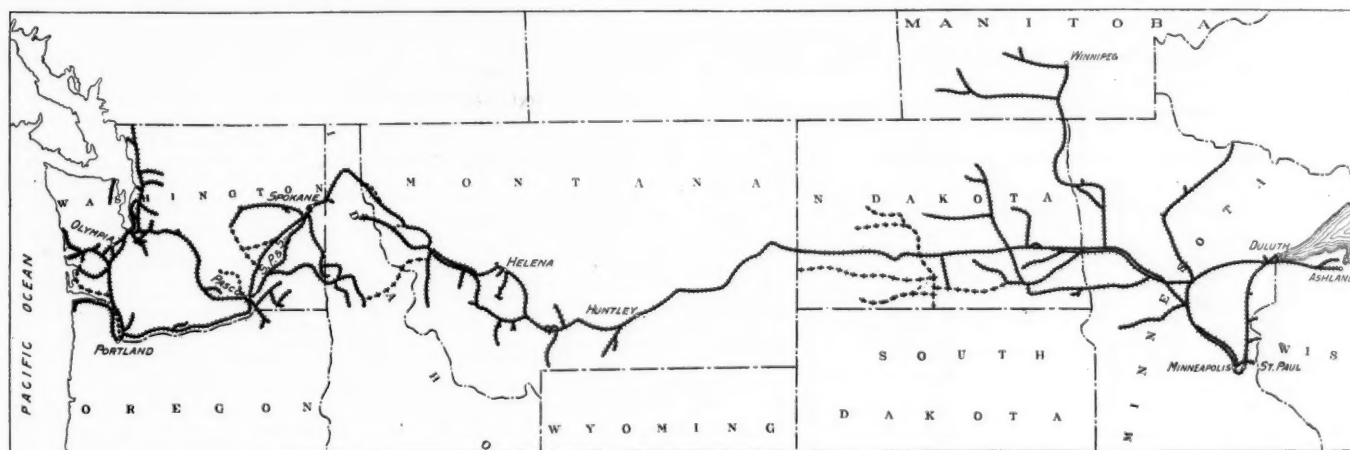
Maintenance of way per mile of first, second, etc., track operated, two miles of siding and switch tracks being counted equal to one mile of main track, cost \$1,051 in 1909 and \$1,083 in 1908.

There were payments of \$30,100,000 made to the company last year, this sum representing the last instalments on subscriptions to new capital stock. It will be recalled that in 1906 the company decided to issue \$93,000,000 additional common stock, and all of this stock has now been paid for and is

expenditures for changes in line, reduction in grades, elimination of curves, heavier rails, second track, power of greater capacity, block signals, and in all other facilities which helped to increase the output of the "plant" and to reduce what our English friends call "working expenses." The recollections of the equally remarkable financial results will in course of time become dimmed, but I wanted to leave in some concise form a record of Mr. Harriman's remarkable achievement, particularly in the greater and better service he has given to the public, and a record which in years hence will be a matter of great interest to the students of railway economics and railway problems."

Fully as remarkable, from an operating point of view, is the diagram showing passenger service and traffic. With an increase in revenue passenger train miles of 100 per cent. since 1898 the number of passengers carried one mile has increased 250 per cent. Viewing the Union Pacific as a business corporation, it shows an increase of 141 per cent. in gross transportation revenues, with an increase of less than 14 per cent. in mileage operation.

The results of operation in 1909 are the best in the history



Northern Pacific.

outstanding. This makes a total of \$248,000,000 stock outstanding of the Northern Pacific.

The following table compares the results of operation in 1908 and 1909:

	1909.	1908.
Average mileage operated	5,671	5,633
Freight revenue	\$47,073,305	\$46,423,836
Passenger revenue	17,330,608	18,133,239
Total operating revenues	68,460,747	68,220,677
Maintenance of way	7,847,050	8,762,297
Maintenance of equipment	7,845,689	8,572,717
Traffic	919,199	807,849
Transportation	20,305,621	20,659,119
Total operating expenses	38,020,005	39,840,684
Taxes	2,547,835	2,717,486
Operating income	28,322,267	26,303,433
Gross corporate income	32,019,905	30,417,577
Net corporate income	21,639,350	19,893,068
Dividends	14,105,000	10,850,000
App. for insurance fund		2,784,950
Surplus	7,534,350	6,258,118

UNION PACIFIC.

The greatest tribute that has been paid to Mr. Harriman's genius is the report of the Union Pacific for the fiscal year ended June 30, 1909. In referring to a diagram contained in the report showing the increase in service to the public, William Mahl, comptroller, who has recently been elected vice-president, says truly and with real eloquence: "It is prepared specially to show summed up at a glance Mr. Harriman's work in the remarkable increase in service to the public within a comparatively short time and over a comparatively slight increase in mileage—the result of Mr. Harriman's policy in the perfection of the "transportation plant" by large

of the company. Total transportation revenue amounted to \$78,800,000, an increase of \$2,700,000 over the previous year, and total operating expenses amounted to \$37,900,000, as against \$41,700,000 in 1908, a decrease of \$3,800,000. The increase in revenue is due mostly to an increase of 5.7 per cent. in passenger revenue and 2.11 per cent. in freight revenue. In 1909 there was \$17,700,000 revenue from passengers, the revenue passengers carried one mile totaling 795,000,000, an increase of 4.5 per cent. over the number carried one mile in 1908. The revenue from freight amounted to \$54,000,000 last year and the tons of revenue freight carried one mile totaled 5,267,000,000, only very slightly less than in the previous year. The average distance each passenger was carried was 110 miles in 1909 and 118 miles in 1908, and the average receipts per passenger per mile were 2.17 cents in 1909 and 2.16 cents in 1908. The average distance each ton was carried was 384 miles in 1909 and 403 miles in 1908, and the average receipts per ton per mile were 1.024 cents last year and 1.003 cents the year before.

The reduction in operation expenses came from a reduction in both maintenance charges and cost of transportation. Maintenance of way and structures cost \$7,700,000 in 1909 and \$9,100,000 in 1908. Maintenance of equipment cost \$7,400,000 last year and \$8,300,000 the year before. Transportation expenses cost \$17,900,000 last year and \$19,400,000 the year before. The maintenance charges of equipment and maintenance of way together absorbed 19.54 per cent. of gross revenue last year, as compared with 22.69 per cent. in 1908, and operation—that is, traffic transportation—and general expenses absorbed 27.64 per cent. last year, as against 31.30 per cent. in 1908, so

that the operating ratio for rail lines was 47.18 in 1909 and 53.99 in 1908. The following table shows the unit cost of maintenance:

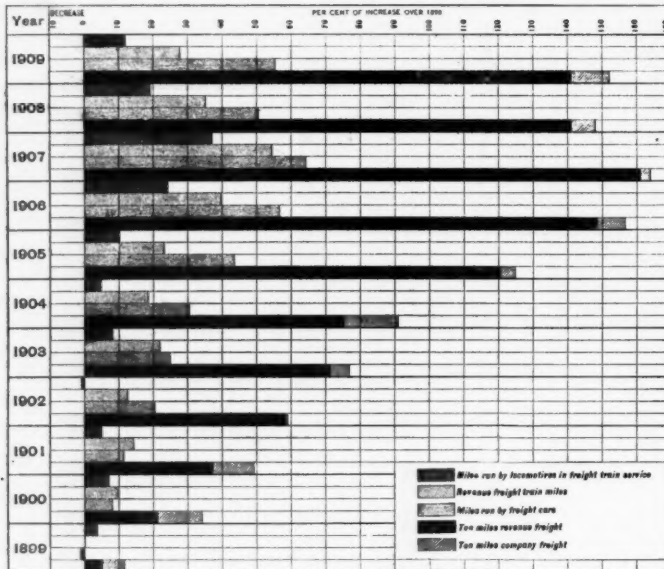
	1909.	1908.
*Maintenance of way	\$1,185	\$1,485
†Repairs and renewals per locomotive.	3,129	3,092
" " " pass. car.	1,189	1,086
" " " fr't car.	100	116

*Per mile of first, second, etc., main tracks, no account being taken of siding and switch tracks.

†Repairs and renewals of equipment, no charge being made by the company for depreciation.

The decrease in cost of repairs to freight cars results from a decrease in payment to foreign roads for repairs of the Union Pacific's cars, while on foreign lines, and also from an increase in the collection from foreign roads for the repairs of their cars and from a change in the method of allotting repairs of cars under the custom-house plan put into effect some years ago.

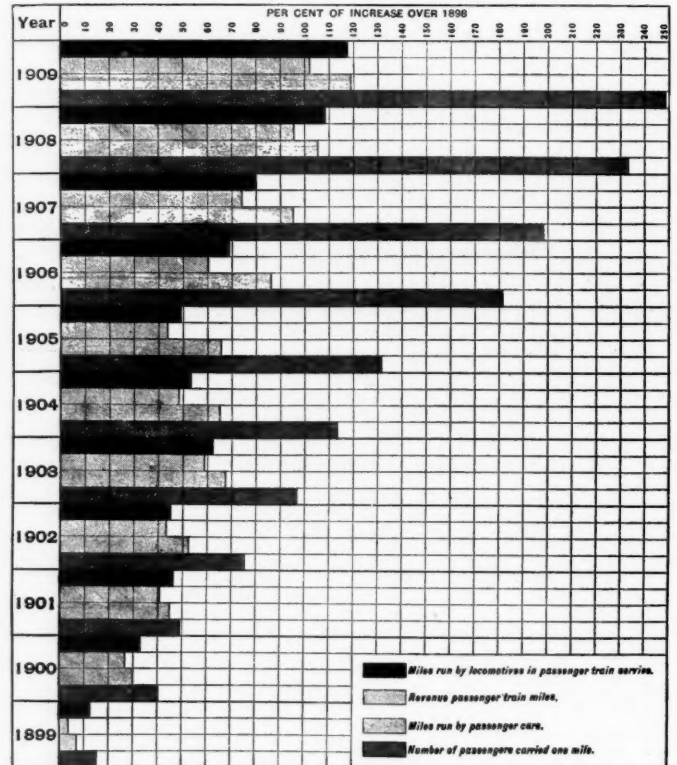
The interest in the financial operations of the company in



Freight Service and Traffic.

the past year is all the greater, because the annual report is particularly frank and complete in its showing of what changes have taken place. The company sold \$29,600,000 first lien and refunding 4 per cent. bonds and issued \$3,800,000 stock in exchange for \$6,700,000 4 per cent. convertible bonds which were presented for conversion into stock at \$175 of bonds for \$100 par value stock. The company received, besides the \$29,600,000 cash from the sale of its bonds, \$45,400,000 loan paid back by the Southern Pacific, \$8,200,000 from the sale

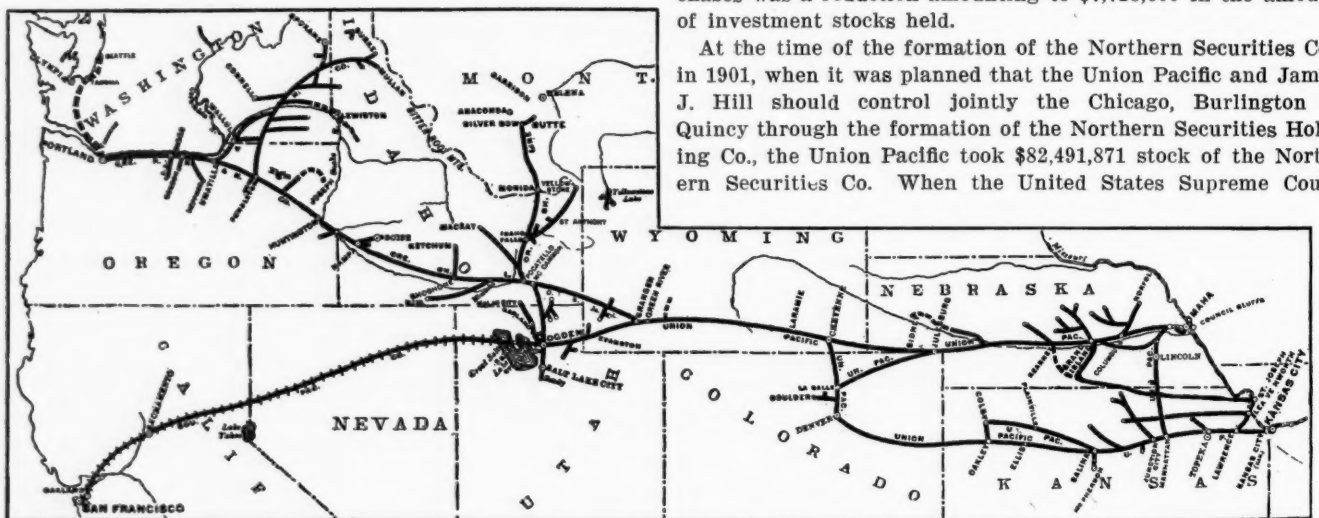
of stocks and bonds owned, \$8,000,000 surplus from operation and \$9,900,000 balance from income other than transportation. With these sums and other smaller ones received the company spent and charged to capital account \$7,200,000 for acquisition of new lines and for additions and betterments, paid off \$41,200,000 loans, increased its cash holdings by \$22,600,000, and loaned on demand and time deposits \$18,800,000, and advanced for construction of new lines \$6,900,000.



Passenger Service and Traffic.

During the year the company sold the remainder of the Chicago, Milwaukee & St. Paul common stock, the remainder of the Great Northern preferred stock and the remainder of the Great Northern ore certificates (part of these shares were sold since the close of the fiscal year), and the remainder of the common stock of the Northern Pacific. The company added to its holdings of Illinois Central stock by the purchase of \$2,376,900 additional stock, bringing the total of this stock now held up to \$22,500,000. The result of these sales and purchases was a reduction amounting to \$7,728,600 in the amount of investment stocks held.

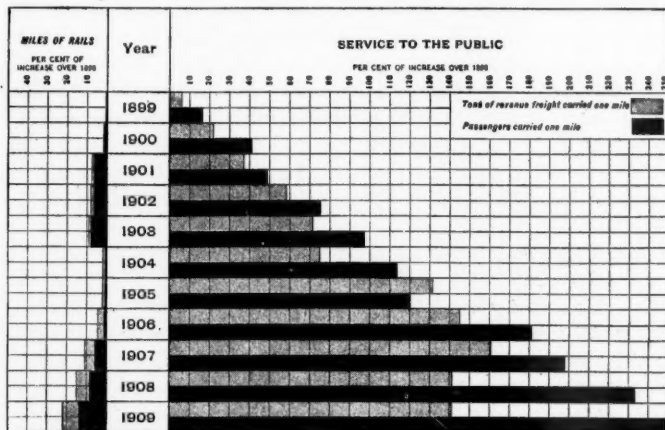
At the time of the formation of the Northern Securities Co., in 1901, when it was planned that the Union Pacific and James J. Hill should control jointly the Chicago, Burlington & Quincy through the formation of the Northern Securities Holding Co., the Union Pacific took \$82,491,871 stock of the Northern Securities Co. When the United States Supreme Court



Union Pacific System.

The Southern Pacific line from Ogden to San Francisco is shown cross-hatched.

held that the Northern Securities Co. was not legal and the assets of the company in consequence were distributed pro rata among the stockholders, the Union Pacific received \$89,391,401 stock of the Great Northern, the Great Northern ore certificates and the Northern Pacific. All of these stocks have now been sold except \$724,900 Northern Securities Co. "stubs." The sum realized from these sales amounted to



Increase in Service to the Public.

\$147,377,342. This gives the Union Pacific a net profit on its transactions in Hill stocks of \$57,985,941.

The following table gives a comparison of the operations of the company in 1908 and 1909:

	1909.	1908.
Average mileage operated	6,062	5,781
Freight revenue	\$54,000,195	\$52,885,213
Passenger revenue	17,672,357	16,719,364
Total operating revenue	78,750,462	76,039,225
Maintenance of way	7,682,146	9,106,168
Maintenance of equipment	7,434,599	8,325,812
Traffic	1,563,031	1,399,556
Transportation	17,914,909	19,427,488
Total operating expenses	37,945,086	34,345,190
Taxes	2,570,562	2,444,726
Net operating income	38,234,814	31,900,464
Gross corporate income	55,971,207	47,920,156
Net corporate income	41,598,401	35,719,400
Dividends	23,660,151	23,530,648
Surplus	17,938,250	12,188,752

NEW BOOKS.

The A B C of Railroad Signaling. By W. H. Elliott. Chicago: MacKenzie-Klink Publishing Co. 5 x 7½ in.; 75 pages.

This book, by the well-known and accomplished signal engineer of the New York Central, consists of a single chapter. This chapter is not too long, however, as a considerable portion of the 75 pages is taken up with half-tone engravings of signals, cabins, machinery, etc. The substance of the monograph is a lecture which was delivered by Mr. Elliott before the Harvard School of Business Administration. The publisher's preface says that the book is intended to conduct the reader merely to the entrance of signaling.

Proceedings of the Tenth Annual Convention of the American Railway Engineering and Maintenance-of-Way Association. E. H. Fritch, Secretary, Chicago. Published under direction of the Committee on Publications. Two parts, 6 in. x 9 in.; 1,657 pages. Paper \$5, cloth \$6, half-morocco \$7.

The current volume of Proceedings of this association contains reports of sixteen standing committees and two special committees with the discussions and appendices of each, several valuable papers, memoirs of two deceased members, Walter G. Berg and D. D. Carothers, and the usual minutes of the business session, constitution and list of members. The size of the proceedings has more than doubled in two years, the increase over last year being 80 per cent., which has made it necessary for the first time to bind the volume in two parts.

The standing committee reports cover every branch of maintenance of way and add a great deal of data to the valuable collection already made by them. One feature of note is the compilation by the committee on roadway of the laws of all the states governing the elimination of grade crossings.

The special committees reported on the "Injury to Signals, Tracks and Bridges due to Brine Drippings from Refrigerator Cars" and on "Uniform General Contract Forms." The report of the latter includes 115 pages comparing in detail the contract forms recommended by the association with those in use on various roads. The papers presented were on "Stresses in Track Fastenings" and the "Question of Screw Fastenings to Secure Rails to Ties."

Elements of Transportation. By Emory R. Johnson, Ph.D., Professor of Transportation and Commerce at the University of Pennsylvania. Published by D. Appleton & Co., New York and London, 1909. 354 pages; 5 x 7½ in.; cloth. \$1.50.

Professor Johnson in this work has expanded somewhat the general scheme of his "American Railway Transportation" and has produced a book covering water transportation as well as rail transportation, and containing also an important summary of the work performed by street railways, subways, etc. Professor Johnson possesses in the highest degree the ability to compress a great many facts into small space, and his books are always distinguished by the fact that they prefer an impartial statement of these facts to an *ex parte* presentation of a case. It would have been easy to fill four or five volumes with the material gathered into these 354 pages, as may be seen from the chapter headings, which cover transportation defined; the origin and growth of the American railway; the present railway system of the United States; track, car and train—the railway mechanism; the railway company and how it does its work; stocks and bonds, earnings, expenses and profit; freight service; passenger service; express service; domestic mail service; relation of railways to each other, including competition; pools and traffic associations; railway rates and fares; public aid; street railway regulation; the origin and growth of electric railways; electrification of steam roads from an economic standpoint; steamships and sailing vessels; ocean freight service; the Panama canal; the maritime policy of the United States; traffic on our inland waterways, etc. The book is fully illustrated, and while it does not purport to bring much new information to the student of transportation, it is an excellent compilation of information already gathered.

Mechanical World Pocket Diary and Yearbook for 1910. A collection of useful engineering notes, rules, tables and data. *Mechanical World*, 65 King street, Manchester, England. 300 pages, 3½ x 6 in.; cloth.

The twenty-third annual issue of this well-known mechanical engineer's pocket book includes a number of improvements and a considerable amount of new matter. The section on gas engines has been thoroughly revised and occupies ample space for a proper treatment. There is also an entirely new section on oil engines, including notes on crude oil engines. There is a section on steam turbines which puts in condensed shape the principal data relating to the more prominent types of steam turbines. The book is now printed on a thin tough paper of good quality, which effects considerable reduction in bulk for the same number of pages, making it a more convenient pocket book.

Letters to the Editor.

RATES NOT BASED ON COST OF SERVICE.

Salt Lake City, Utah, Oct. 13, 1909.

TO THE EDITOR OF THE RAILROAD AGE GAZETTE:

I need some further enlightenment on two things mentioned by J. H. Johnston, of Oklahoma, in a letter published in your issue of Oct. 8, under the caption: "Basing rates on Water Competition."

In the first place, what is Mr. Johnston's authority for saying in connection with the rate from New York to San Francisco on green coffee, which he figures is based on 4.7 mills

per ton per mile, that: "We may consider that that figure represents cost of service, including both interest on fixed charges and operating expense, etc.?" What ground or authority has he for so considering? Five mills per ton per mile is regarded by railway men as roughly marking the danger line in rate making. It is the old basis for rating railway material for other lines. Under average conditions it will, perhaps, yield a slight margin over operating cost in moving that particular business, not even general cost of maintenance, let alone "interest on fixed charges, etc.," being taken into the calculation—simply the bare expense of rolling the car bearing that particular load. If I am not altogether mistaken, Mr. Johnston is wide of the mark in his assumption of what this figure represents, and if his premise is wrong the conclusions he bases thereon are valueless. I would like to have Mr. Johnston go into this matter and explain further. I don't believe the statement as it stands.

In the second place, Mr. Johnston, notwithstanding I hear he is an old railway man, cannot understand why, when water competition forces rates from one direction, rates are made by the railways from other directions to the same point to meet that situation "even where no pretense of water competition exists." For example, from Chicago and common points to San Francisco rates are as low as or lower than from New York, and such rates are not protected to points intermediate to San Francisco as maxima. The interstate commission has approved that adjustment and Mr. Johnston ought to know why.

It is the aim of every carrier to equalize the producer dependent upon it for an outlet in all markets where it can afford to make rates necessary to accomplish that. If competitors in other localities enjoy water competition to a certain market it devolves upon the carrier serving the interior manufacturer to equalize that for him or see the industry on its own line excluded from that market. Why should it cause complaint when the railways meet that responsibility? It is the fact that they can and do meet it that has made this country great; made it grow throughout the interior as well as along the coast as no country ever did before or ever could without similar treatment. It is the effort to cripple the carriers' ability to continue that policy by attempting to use the cheapest rates resulting from it as the measure and maximum of all railway revenue that constitutes the danger to our commercial and industrial welfare which farseeing men have pointed out, but which Mr. Johnston says he does not fear. If that effort is successful it means just what Mr. Johnston says, that the railways must retire from such business as will not yield a full return, all expenses considered. That is what Mr. Johnston says would be a "blessing in disguise." Some of us who have been studying these problems for many years think it is well disguised, for we think it means stifled production, smothered competition and dry rot, with destruction of prosperity to carrier and patron alike, the complaining jobber into the bargain, whatever he may conceive his temporary advantage to be.

From Mr. Johnston's former letter on the subject I am familiar with his view that the jobber is equally entitled with the producer to protection within certain "zones" of so-called "tributary" territory against his competitor, but I am unable to agree with him. The producer has been, is and ever must be our first care. We must get him to his markets on a profitable basis as far as we can. Being a prosperous producer, he is an able consumer, and that he must be before any community can thrive or before any jobber can make money selling its goods. The despatches of October 4 quote Commissioner Prouty during the Spokane hearing as follows:

"I do not think the Commission will give much weight to the effect this decision (on Spokane rates) will have on jobbing territory. It does not matter a great deal to the people of Spokane whether they purchase their goods through Spokane jobbers or through jobbers from other points, but

it does concern them very much whether they are compelled to pay more for those commodities on account of the rates charged, etc."

I would add to that only that it concerns them more still whether the rate adjustment given them by their railway tends to keep their productive energies profitably employed. If it does, and considering their rates inbound and outbound together the general adjustment is fair and reasonable and both community and carriers are prospering, I see no good ground for complaint. In point of fact there is little complaint except from the jobber, who ever bases his criticism on comparisons rather than on the rates themselves, seeking the lowest basis carried by the railway anywhere, whether under different conditions or not, by which to measure all its tariffs. Does the jobber himself live under such a rule? He does not and he could not.

Mr. Johnston thinks our tariffs ought to be made over so they could be understood and could be explained. They can be just as easily explained now as the price books the Oklahoma jobber furnishes his traveling men. The principle on which they are based is not different. Our rates, if I correctly understand them, are based on value, rather than on cost. True the total return from all traffic moved is intended to yield a fair profit on the operations of the property after all cost is met, but speaking of the individual transaction, a railway's transaction, like any one else's transaction, the price of it is the value to the purchaser, not the cost to the carrier. There is not a manufacturer, merchant, laborer, professional man or any other in the land, including the city of Oklahoma, who does not market his product in exactly the same way. None of them conduct all transactions at the same level of profit. Of course, if they are not failures, they must average out of the entire business done a reasonable margin over the entire cost of doing it, figuring in all items, fixed as well as other charges. But some transactions will net, by themselves, barely more than the additional cost of doing that additional business. They are not a loss, but they are done below the necessary average of profit. They constitute sales of surplus product or surplus capacity. If not so disposed of it remains undisposed of and goes to waste. So sold there is a little in it, but there is not a concern in the world which could live under the rule Mr. Johnston and others seek to apply to us, of measuring all its transactions by the cheapest one it undertakes.

The jobber is prospering from one end of the country to the other, yet his complaints, like the poor, are always with us. He is never content with his "zone," which he always thinks should be longer and wider. The railway man is between—not two fires, but a hundred fires which the jobber has built. His claims for "naturally tributary" territory so overlap that if the United States were as large as all the Americas there wouldn't be enough to go round. Our jobbing friends remind me of the Irishman who was challenged to a duel with another son of Erin. Selecting swords as the weapons and his friend McCarthy for his second, he said: "McCarthy, I charge you on your life see that I stand ten paces nearer to O'Toole than O'Toole stands to me." I never knew a jobber who didn't want to get several paces nearer his competitor in intermediate "tributary" territory than he would have his competitor come to him, and the specious reasoning advanced why it is incumbent on the railway to bring about that desirable state of things is endless. Mr. Johnston has used some of it and I don't believe he is any too sure of his facts. At any rate, I am not sure of them.

F. H. PLAISTED,
Assistant General Freight Agent, Oregon Short Line.

The opening of the railway from Peking northwest to the great wall at Kalgan, 137 miles, is announced, notable as built by Chinese engineers with Chinese capital. It has four tunnels and steep grades. This is the Peking end of the great caravan route to Irkutsk.

Contributed Papers.

HANDLING FAST MERCHANDISE ON THE ST. LOUIS & SAN FRANCISCO.

The St. Louis & San Francisco is using a method of handling merchandise shipments, which was designed to supplement its Red Ball scheme, and particularly to expedite the movement of merchandise after it has reached the regular Red Ball destinations. The management of the road believes that this method has tended to improve its service materially and to attract new business. Its earnings from merchandise L. C. L., etc., traffic for the fiscal year ending June 30, 1907, were 20.34 per cent. of the gross freight revenue; for the year ending June 30, 1908, 21.97 per cent. of the gross freight revenue, and for the year ending June 30, 1909, 22.24 per cent. of the gross freight revenue. It is believed that the method referred to has been one of the causes of both the absolute and the relative growth of merchandise traffic.

Various methods of expediting the movement of merchandise traffic by loading it in through cars moving to final destination, or to the point nearest to final destination that can be reached by a through car, and then constantly checking and supervising its movement, have been used. One trouble with most of these plans is that they do not supervise and stimulate the movement of goods beyond the arrival at the breaking point of the car. Beyond that point the car and contents are left to the tender mercies of the yardmaster and the agent. This lack of supervision often results in serious delays, especially during periods of congestion, that are brought to the attention of operating officers only after claims are filed. The principal merit claimed for the Frisco's plan is that it makes possible effective supervision of the handling of merchandise and expeditious movement from its arrival in the yard at the Red Ball destination to its unloading on the platform for city delivery of the local offerings; and the working over also expedites at the transfer platform and facilitates the forwarding and handling to final destination of the transfer offerings.

Under this plan St. Louis, Kansas City, Chicago, Springfield and other designated points continue as before to make "straight" cars for stations to which the movement of traffic is large enough to justify them, and to make "peddler" cars for movement on diverging local trains or other trains designated. In addition the larger shipping stations scrap load to transfer stations, located at various operating terminals and junctions, shipments consigned to points on lines diverging from such transfer stations to which the business is not heavy enough to justify the loading of a straight car for any one station. When these scrap loads are received at a transfer station they are worked into that station's schedule cars, "straight" cars being made for the heavier receiving stations and Red Balled to such stations, and peddler cars being loaded in station order for the less important stations. The schedule for these peddler cars is adjusted to insure them not being overloaded and to enable station order loading and "set out" at stations which regularly receive heavy tonnage, but not in sufficient volume to justify straight cars.

For example, at the Seventh street and Broadway stations in St. Louis peddler cars are loaded for small points near St. Louis and are taken out on local trains, and straight cars are loaded for large points such as Springfield, Ft. Smith, Oklahoma City, Ft. Worth, Dallas, etc. In addition scrap loads are made at St. Louis for all transfer stations—for example, Oklahoma City, which is a large transfer station. That is, instead of loading goods direct for stations near Oklahoma City, such as Chickasha, Lawton, El Reno, etc., goods for all these places are loaded at St. Louis primarily for Oklahoma City. Similarly scrap loads are made at Kansas City, Chi-

cago, Sapulpa and other large shipping points for Oklahoma City. When these scrap loads are received at Oklahoma City they are worked over the transfer platform together with pick-up offerings from the line brought into Oklahoma City by the various local trains and transfer cars from various Oklahoma City connections; that is, the goods are taken from them, and all goods from all points for stations on lines diverging from Oklahoma City—Chickasha, Lawton, Quanah, Vernon, etc.—are taken out and the goods from all points for any given point are put into a car for that point—for example, all goods for Chickasha, Okla., from St. Louis, Kansas City and Chicago, etc., being put into a straight car for Chickasha. Shipments originating at the transfer point—in this example Oklahoma City—for the same destination—in this example Chickasha—are put in the same car as the goods transferred. In many instances the combined shipments for each of a number of small stations make less than a carload. In such cases the goods for different stations are loaded in peddler cars in station order so that goods for each station may be most promptly and conveniently taken out, and on arrival at such station the conductor handling has but the one car to work.

The car containing these scrap loads, together with all merchandise cars, are incorporated in the regular Red Ball system at the point of origin of the shipment except that, instead of being given the usual Red Ball serial number for such stations, cars carrying merchandise are given a distinctive symbol, which indicates at a glance not only the station from which they are loaded, but also the destination of the car and the date loaded. This scheme of symboling greatly facilitates a close check on the proper movement and at the same time materially reduces telegraphing, the car being known by its symbol after the initial report giving car number, initials, symbol and forwarding. And as the symbol indicates destination and contents this information is omitted from the initial forwarding report.

From the arrival of the car at the Red Ball destination the handling is covered by what is called a "Transfer Station 32 Report." The following is the "Transfer Station 32 Report" rendered by Oklahoma City on June 29, 1909, covering the working of schedule merchandise cars, which arrived June 28, 1909.

The following is an analysis of this report, the data in the right-hand column showing the meaning of that in the left-hand column:

S. F. ... 27,084,	KC— 39—Z-2 }	Kansas City—Oklahoma City and
S. F. ... 124,379,	KC— 39—Z-1 }	transfer merchandise of June 26.
S. F. ... 31,207,	KC— 39—Y-1 }	Kansas City—Oklahoma City and
		transfer merchandise of June 25.
S. F. ... 122,893,	X — 18—Z-2 }	St. Louis (Broadway), Okla. City
S. F. ... 40,531,	X — 18—Z-1 }	and Frisco, trans. mdse. June 26
S. F. ... 120,165,	QN — 18—Z-2 }	St. Louis (7th street), ditto.
L. & A. ... 2,678,	QN—218— Y }	Chicago—Oklahoma City and 'Frisco
		transfer mdse. of June 25.
T. & B. V. ... 2,278,	QN— 18—Z-1 }	St. Louis (7th street), Oklahoma
		City and 'Frisco, transfer mdse.
		of June 26.
S. F. ... 31,491,	PA— 20—BG }	Sapulpa—Oklahoma City and trans-
		fer mdse. of June 27.
S. F. ... 32,950,	QN—118—Z-1 }	St. Louis (7th street), Oklahoma
		City—Rock Island, transfer mdse.
		of June 26, and Chicago, Rock
		Island & Pacific, transfer mdse. of
		June 25th.
S. F. ... 121,925,	X —118—Z-1 }	St. Louis (Broadway) Okla. City—
S. F. ... 123,739,	X —118—Z-2 }	Rock Island, trans. mdse. Jun. 26

All these cars arrived on train 435-7 (26th) at 10 a.m., B.H. (28th), 10 o'clock, arrival being 1 hour and 50 minutes late on schedule and virtually on time. This was the second morning from St. Louis and Kansas City and the third morning from Chicago, except that S.F. 31,207, K.C.-39-Y-1, Kansas City merchandise of June 25, was one day late. This was a matter for investigation.

The first nine cars, which were for Oklahoma City proper and Frisco transfer merchandise, were at the platform at 11 a.m., B.H. (28th).

Under remarks is reported the hour the Oklahoma City

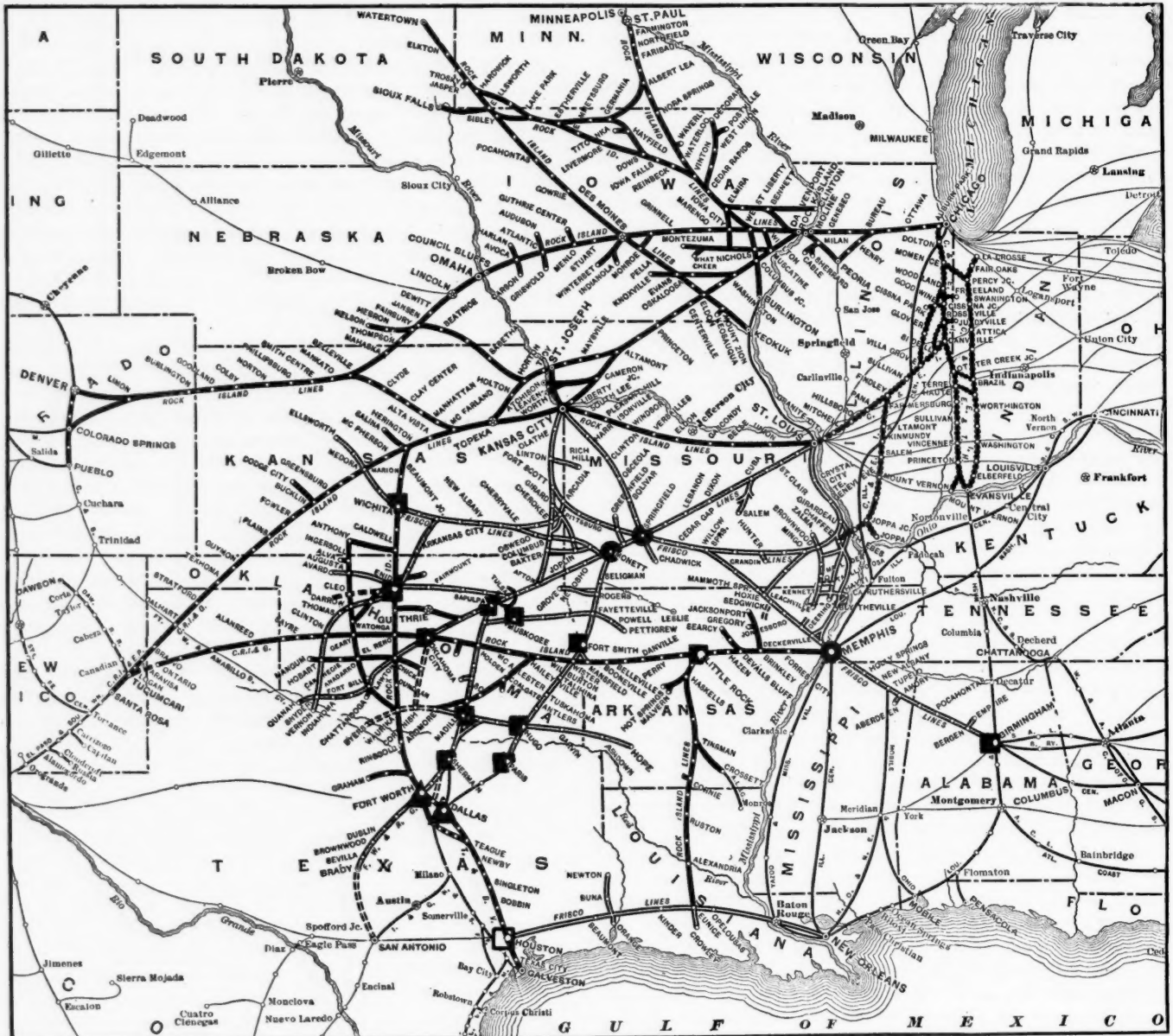
proper offerings from these cars were expensed and on the platform available for Oklahoma City local city delivery, viz., cars

L. & A. ... 2,678 } Ready for delivery at 12, noon, June 28.
S. F. ... 122,893

S. F. ... 40,531 } Ready for delivery at 2:00 p. m., June 28.
S. F. ... 120,165 }
T. & B.V. 2,278 }

28, the second day from St. Louis and Kansas City, and the third day from Chicago.

Under item "Cars worked into and forwarded" we have all merchandise cars made at Oklahoma City platform June 28, these cars carrying not only the Oklahoma City proper offerings, transfer freight from Oklahoma City connections, and pick-up freight from the line, but the transfer freight from



St. Louis and Kansas City Merchandise (Chicago Merchandise Arrives and Delivers One Day Later).

- Arrives first day; works first day; transfer freight delivers second day.
- Arrives first day; works second day; transfer freight delivers third day.
- Arrives second day; works second day; transfer freight delivers third day.
- ▲ Arrives third day; works third day; transfer freight delivers fourth day.
- Arrives fourth day; works fourth day; transfer freight delivers fifth and sixth day.

S. F. ... 27,084 } Ready for delivery 3:00 p. m., June 28.
S. F. ... 124,379 }
S. F. ... 31,207 }
S. F. ... 31,491 }

The actual delivery to C., R. I. & P. of the St. Louis-Oklahoma City Rock Island transfer cars is also shown:

S. F. ... 32,950 } To C., R. I. & P. 11:24 a. m., June 28.
S. F. ... 121,925 }
S. F. ... 123,739 } To C., R. I. & P., 11:35 a. m., June 28.

And the offerings from all three cars should have been worked by the Rock Island into their schedule cars of June

the nine cars which were at the platform at 11 a. m. The transfer completed and the cars closed at 6 p. m., they were pulled from the platform at 7 p. m. and forwarded by proper trains, the through and straight cars by red-ball trains the same evening, about on time, and the peddler cars by proper locals the following morning, each carrying Oklahoma City loading schedule symbols and entering into the Red Ball scheme as Oklahoma City cars, as follows:

T. & B.V. 2,278, HO-1-BH.

Oklahoma City's schedule car 1 for June 28. A car loaded in station order for Fort Smith & Western R.R. stations east of Warwick,

with freight for Ft. S. & W. stations west of Warwick loaded in door. From Oklahoma City Red Ball train 434 at 11:00 p. m., 28th, due Warwick 12:30 a. m., 29th. Freight for points west unloaded and delivered by Ft. S. & W. train 11, due to leave Warwick 2:15 p. m., 29th. Car peddles by Ft. Smith & Western train 12, due to leave Warwick 9:50 a. m., 29th.

S. F., 34,295, HO—2-4-5—BH.

Oklahoma City's schedule cars 2, 4 and 5 for June 28, consolidated account light tonnage, and loaded in station order for the line Greig to Kelleyville, Okla., except Spencer and Chandler.

From Oklahoma City local train 444, 7:00 a. m., June 29, making first day from Oklahoma City delivery.

S. F., 27,889, HO—3—BH.

Oklahoma City's schedule car 3 for June 28, which loads for Spencer and Chandler, Okla., and C. R. I. & P., Chandler Branch, in station order.

From Oklahoma City local train 444, 7:00 a. m., June 29, making first day delivery at Spencer and Chandler, and peddling R. I., Chandler Branch, second day.

The 32 report taken as a whole shows the cars received and worked at transfer stations with the date and hour the local freight for that station from each car is unloaded, expensed and ready for city delivery, and the date and hour the working of transfer freight was finished. The symbol for each car indicates at a glance whether or not the car is received and being worked on schedule and enables a prompt investigation of any delay. The "32 report" also shows the schedule cars made at the transfer station into which the transfer offerings from cars received are worked and their forwarding, and enables prompt handling for correction of any delay in working at transfer or in forwarding of schedule cars made. The cars made are embodied in the regular Red Ball scheme and carry the merchandise symbols of the transfer stations—in this example, Oklahoma City.

Car T. & B. V., 2,278, HO—1—BH.

"HO" is the Red Ball symbol for Oklahoma City.

"1" is Oklahoma City's schedule car 1.

"BH" is the date symbol for the 23th. The day of the month car was loaded.

In the event that more than one car is loaded on any one schedule, this is indicated by adding suffix numbers 1, 2, 3,

etc., to the regular symbol. For example, assume that on June 28 three cars were made to take care of Oklahoma City merchandise and to transfer for Chickasha, Okla., offerings for Chickasha loading into Oklahoma City's schedule car 9, and cars S.F. 122,963, Grand Trunk 6,473 and Erie 105,203 loaded. These cars would be symbolized

S. F. 122,963, HO—9—BH-1.

G. T., 6,473, HO—9—BH-2.

Erie, 105,203, HO—9—BH-3.

The regular Red Ball symbol letter of the station loading the car is applied. To this is added the loading schedule number of the car made, with a suffix date symbol letter to indicate the day of the month the car was loaded—A for the first, B for the second, etc., with the numerals 1, 2, 3, etc., added when more than one car is loaded in any one day on any one loading schedule number.

An important feature of the Frisco method of handling is that all waybills must accompany the freight. The agents at billing and transfer stations enclose in a Frisco Fast Merchandise Red Ball envelope all waybills covering freight loaded in or transferred to a car. Waybills are securely fastened together and if the car carries freight for more than one station the waybills for each station must be fastened together. The waybills must accompany each car, conductors being forbidden to move a car unless the waybills covering it are in the envelope and the blank spaces on the latter are properly filled out. These blanks are as follows:

Car Number..... Initial.....
Transferred to..... Initials.....
At..... Date.....190.....
From.....
To..... (Braking station)
Final destination.....
Train No..... Train Symbol.....
Forwarding Station—Symbol letter, Number and Symbol.....

FRISCO.

Form 574

TRANSFER STATION 32 REPORT.

SUPERINTENDENT TRANSPORTATION, Springfield, Mo.:

Following Cars Frisco Fast Merchandise Red Ball Freight received at this Transfer Station, worked into Schedule Cars and forwarded as indicated below:

icated below:

CARS RECEIVED AND WORKED.												CARS WORKED INTO AND FORWARDED													
Forwarding Station						ARRIVED						Transfer Station						Pulled from						FORWARDED	
Car		Mdse. Loading		Sym.		Date		Hour		Train No. & Sym.		Placed at Platform		Car		Mdse. Loading		Sym.		Finished Working		Pulled from Platform		Train No. and Symbol	
Initial "C"	Number "D"	Sym. "E"	No. "F"	Sym. "G"	Date "H"	Hour "I"	bol "J"	Date "K"	Hour "M"	Initials "O"	Number "R"	Sym. "S"	No. "U"	Sym. "V"	Date "W"	Hour "X"	Date "Z"	Hour "BA"	Date "BC"	Hour "BD"	Symbol "Br"	No. "Bf"			
S. F.	27,084	KC	39	Z-2	BH	10 P.	435	BH	11 P.	T. & V.B.	2,278	HO	1	BH	BH	6 A.	BH	7 A.	BH	11 A.	434 ¹				
S. F.	124,379	KC	39	Z-1	...	P.	...	...	P.	S. F. ...	34,295	...	2-4-5	...	P.	...	P.	BI	7 P.	447 ²			
S. F.	31,207	KC	39	Y-1	...	P.	...	...	P.	S. F. ...	27,889	...	3	...	P.	...	P.	...	P.	...	444 ³		
S. F.	122,893	X	18	Z-2	...	P.	...	...	P.	T & V.B.	2,283	...	6	...	P.	...	P.	BH	11 A.	434 ⁴			
S. F.	40,531	X	18	Z-1	...	P.	...	...	P.	S. F. ...	36,776	...	7	...	P.	...	P.	BI	7 P.	447 ⁵			
S. F.	120,165	QN	18	Z-2	...	P.	...	...	P.	S. F. ...	123,536	...	8-108	...	P.	...	P.	...	P.	...	...	...
L. & N. ..	2,678	QN	218	Y	...	P.	...	...	P.	S. F. ...	40,581	...	9	...	P.	...	P.	BH	11 A.	435 ⁶			
T. & B. V.	2,278	QN	18	Z-1	...	P.	...	...	P.	...	...	...	10	Discontinued	...	P.	...	P.	...	P.	...	...	
S. F.	31,491	PA	20	BG	...	P.	...	...	P.	S. F. ...	41,293	...	11	...	P.	...	P.	BH	11 A.	435 ⁷			
S. F.	32,950	QN	118	Z	...	P.	...	...	P.	S. F. ...	120,165	...	12	...	P.	...	P.	...	P.	...	...	...
S. F.	121,925	X	118	Z-1	...	P.	...	...	P.	S. F. ...	123,485	...	13-14	...	P.	...	P.	...	P.	...	...	...
S. F.	121,925	X	118	Z-1	...	P.	...	...	P.	S. F. ...	121,965	...	113	...	P.	...	P.	...	P.	...	...	...
S. F.	123,739	X	118	Z-2	...	P.	...	...	P.	S. F. ...	36,427	...	15	...	P.	...	P.	...	P.	...	...	...
S. F.	123,739	X	118	Z-2	...	P.	...	...	P.	S. F. ...	122,893	...	115-215	...	P.	...	P.	...	P.	...	...	...
S. F.	123,739	X	118	Z-2	...	P.	...	...	P.	S. F. ...	30,119	...	16	...	P.	...	P.	...	P.	...	...	...
.....	.....	...	...	...	...	P.	...	...	P.	L. & A..	2,678	...	17	...	P.	...	P.	...	P.	...	...	...
.....	.....	...	...	...	...	P.	...	...	P.	S. F. ...	36,851	...	18	...	P.	...	P.	...	P.	...	...	...
.....	.....	...	...	...	...	P.	...	...	P.	S. F. ...	46,372	...	Oil.	...	P.	...	P.	...	P.	...	...	...
.....	.....	...	...	...	...	P.	...	...	P.	S. & M.	27,503	...	Oil.	...	P.	...	P.	...	P.	...	...	...

REMARKS: ¹S. F.—122,893, 12:00 noon; ²L. & A.—2,678; ³S. F.—40,531, 2:00 P. M.; ⁴S. F.—120,165; ⁵T. & B. V.—2,278; ⁶S. F.—27,084, 3:00 P. M.; ⁷S. F.—124,379; ⁸S. F.—31,207; ⁹S. F.—31,491; ¹⁰S. F.—32,950 to C. R. I. & P., 11:24 A. M.; ¹¹S. F.—121,925 to C. R. I. & P., 11:24 A. M.; ¹²S. F.—23,739 to C. R. I. & P., 11:35 A. M.

INSTRUCTIONS.

This Transfer Station 32 Report to cover cars worked and made at Transfer Stations previous 24 hours, and must be filed with Operator and transmitted Superintendent Transportation not later than two hours after scheduled departure of last local freight, or at such hour as may be instructed to cover special local conditions at each Transfer Station.

Each Scheduled Merchandise Car received at and forwarded from each Transfer Station must be reported on one of these blanks, with full information as called for, using as many lines as necessary to give all information.

Special Care must be taken to fill in all the information called for, and use as many blanks as necessary to make the report clear, concise and intelligible, covering all Merchandise Cars received and forwarded from Transfer Station reporting.

In reporting hours, show the nearest even hour, i. e., 4:29 o'clock should be shown at 4 o'clock; 4:31 o'clock should be shown as 5 o'clock. A. M. or P. M. should be indicated by drawing a pen through A. or P., as the case may be, i. e., in reporting hour as 4 A. M., draw pen through the A.

Under "Remarks," explain any unusual delay—either in spotting car to platform after arrival in yard; delay for empties; delay in working car; delay in pulling car from platform after ready to forward, or delay in forwarding. Also any special condition, such as omission of scheduled freight for any one or more stations, giving cause, etc.

Under the old method Red Ball cars were loaded to a Red Ball breaking point and run through to that point. From there they peddled to all stations for which they contained shipments. Consequently there might be a car from Kansas City with freight for each of a number of small stations, also cars from St. Louis and other points, including pick-up cars brought in by local freight trains from connecting sub-divisions, each with freight for the same stations. All of these cars would be hauled by the local and when a station was reached it would, therefore, be necessary to dig through several cars from different points to find and unload freight for that station. Under the present system shipments for a station are concentrated in a single car or more if necessary for that station. The goods are handled at the transfer platform by men who have grown expert at this work from long experience; delivered at final destination by a straight car when tonnage justifies; placed at freight house under transfer station seals, to be worked by the destination agent, or are unloaded from the peddler car by the train crew whom experience makes expert at this, the local agent or his representative checking the freight as it is taken from the car. This plan makes practicable a complete check on the handling of merchandise for the following reasons:

(1) The scheduled merchandise cars are incorporated in the regular Red Ball system. A Frisco fast merchandise card is attached to each side of the car, carrying a symbol which indicates where it was loaded, its destination and the date of loading. This symbol also appears on the Frisco Fast Merchandise envelope, in which the waybills are enclosed and which accompanies the car to destination. The initial forwarding of the car, including the car number, initials and symbol, is telegraphed to the office of the superintendent transportation at Springfield, Mo., by what is known as "Consist 23 Report" from point of forwarding within one hour of the departure of the train and a record of this is made in the Fast Merchandise Record Book. Subsequent handling is reported by symbol by "Telegraphic Passing Reports"; by "Telegraphic Set Out Reports," in case cars are set out short of proper destination, with reason for the set out; by "Delayed Cars Forwarded Reports," covering the forwarding of cars so set out, and by "Arrival Reports" when destination is reached. Additional check is secured by telegraphic reports from various terminals and junctions and important stations covering Red Ball loads on hand for movement at 7 a.m. each day.

(2) The "Transfer Station 32 Report," which covers the cars received and worked at transfer stations, shows at a glance whether or not any car has been received and worked on schedule, and also the schedule cars sent from each transfer station. If the date when a certain L. C. L. shipment was forwarded from a large shipping point, such as St. Louis, Kansas City or Memphis, is known, it can be traced quickly through the transfer station to its arrival at destination station or to its delivery to a connecting line. Of course this is merely approximate, but under this system an immediate reply to any tracer is possible, and check may be made at once by wire of the actual handling accorded the shipment. It is stated that as a result of good handling it is now unusual for tracers for L. C. L. freight to be received. Transfer stations make a special report of all over and short shipments, which are promptly investigated for correction and with a view to locating responsibility. The "Transfer Station 32 Reports" were originally handled by wire, but merchandise is now moving so satisfactorily that these reports are now sent by mailgram envelopes. Transfer stations and heavy receiving stations are also required to make a report daily of the tonnage of merchandise cars made on that date. This gives a daily check on merchandise loading and enables the superintendent of transportation to adjust the schedule of cars from time to time so as to satisfactorily handle freight at the transfer and heavy receiving stations.

(3) Important stations are also required to render weekly a "Delay Report," covering merchandise received behind schedule, with full waybill reference, the car number and initials of the car in which originally loaded and full references to transfers. This makes possible prompt investigation of individual shipments that may have been delayed by erroneous loading or otherwise. Transfer stations are also required to make monthly statements of the cost of handling merchandise per ton. These statements include tonnage received, tonnage forwarded, tonnage transferred, total tonnage handled and the aggregate wages paid to the men employed in this work, also figures covering the same information for the previous month and the same month of the previous year. Statements of performance of various fast merchandise trains are rendered semi-monthly, creating a spirit of friendly rivalry between the various superintendents. It is stated this has contributed materially to bringing the service up to a high standard of efficiency and making approximate schedule delivery at all points. Semi-monthly reports are also made of the performance of local freight trains on each division, which are found of great value in keeping local trains lined up so as to secure movement and delivery of package freight approximately on time.

The accompanying map gives a graphic illustration of the fast merchandise service being rendered by the Frisco under this scheme of handling.

The method of handling merchandise freight here described was devised by E. D. Levy, superintendent transportation, Springfield, Mo., and under his supervision the details were worked out and the package freight is handled by a Fast Merchandise Bureau in his office, which is in charge of C. H. Miller, chief clerk.

PRESENT CAR SUPPLY.

BY ARTHUR HALE.

The usually accepted law of supply and demand applies no more to the supply of freight cars than to the supply of any other form of transportation. This is because the price of transportation—that is, the rate—does not vary.

If this law of supply and demand applied to railway work, when the demand for transportation was less than the supply the rate would fall until the demand increased or until the cost of producing transportation were reached. When the demand exceeded the supply the rates would rise until, under the stimulus of a high rate, the production of transportation would be quickened, and again the supply would meet a demand which might have been somewhat lessened by the increased rate.

These fluctuations in price, so familiar to traders in all articles, do not occur in transportation. For reasons which we need not here discuss, freight rates are now stable, and when they do change, the slight changes made do not usually occur under the law of supply and demand.

The above statements I take to be axiomatic, but they are not generally appreciated. The reason for this is, that usually the supply of cars is greater than the demand. The business world goes ahead taking it for granted that the car supply is adequate against all demand, and when a car shortage does come, it comes with a shock and as a surprise.

Everyone is used to receiving goods on tender of the price. So used are we to the law of supply and demand that when, in trading, we tender an agreed price we feel we have a right to the goods. When people tender the agreed price for cars and do not receive the cars they feel shocked and even aggrieved, and too often they discuss the subject from the point of view of their grievance. Not infrequently they appeal to the law. Now, the common law enjoins carriers to make a reasonable provision of vehicles, but only a reasonable provision. It does not prescribe any excessive provision to meet an extraordinary demand, and it does not satisfy people

with grievances. Attempts to modify the law to meet these grievances are not as yet general enough to demand attention here.

If it were practicable to apply the law of supply and demand to railway rates, it seems possible that there would be more cars and other railway facilities than there are now. Railways, in the hope of profiting largely in periods of great demand, might be willing to take more risk in providing facilities which would be ordinarily unnecessary. In trades where the law of supply and demand applies, if only in a limited way—as in the hotel and livery business—the trader often feels justified in maintaining an unduly large number of rooms or horses, because he is repaid by high prices during a "rush season."

Certainly, if the law of supply and demand affected railway rates there would be few car shortages, and none of any extent or duration. An immediate adjustment of freight rates would keep the demand and supply approximately equal.

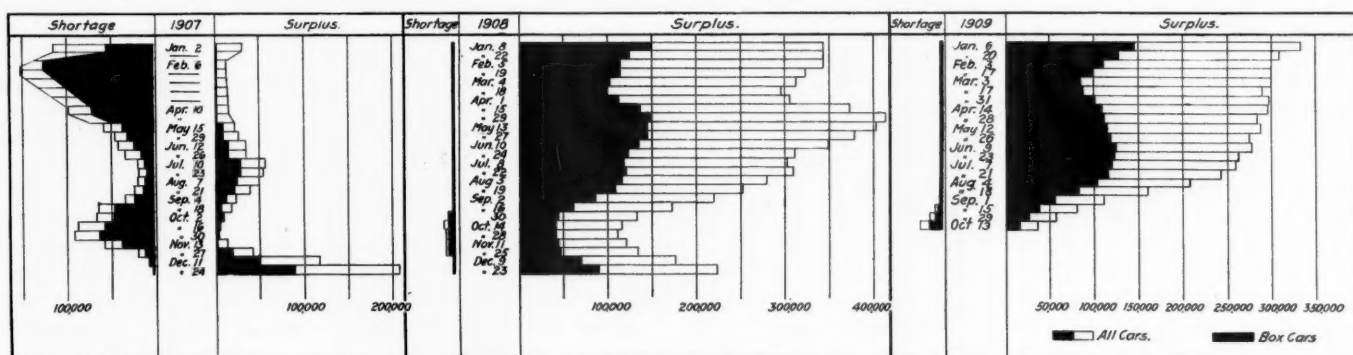
This much is said only in explanation. There seems no prospect of any change in conditions which will subject the railways to the law of supply and demand. It remains to consider the actual situation.

Here it will be found that the absence of the law of supply and demand aggravates the situation as soon as a car shortage appears. When the demand for a commodity in one locality so raises the price as to make it very profitable to supply the demand the difference between freight rates from distant and

distribution which will justly meet any emergency. The Interstate Commerce Commission and the state railway commissions are helping in their way, and the Supreme Court will be heard from at its coming session.

Of course, something can be done by the railways to increase their car supply, by the purchase of additional cars. This, however, is not as easy as it looks. In times of car surplus the railways feel justified in doing but little more than replacing their equipment which goes out of service, and the manufacturers of freight cars meet this situation by a reduction of their forces.

When a car shortage comes, the railways at once order cars and the manufacturers promptly accept the orders; but it becomes a physical impossibility to supply cars as fast as they are ordered. The coming of a car shortage is only an indication of revival of industry and consequent full employment of labor, so that the manufacturers of cars have great difficulty in increasing their forces to meet the sudden doubling or quadrupling of the demand, and as a consequence deliveries of cars are very slow. Often in such occasions the railways have had to wait for their new cars for a year or more. This is not always an unmixed evil, for many roads are so well equipped with cars that they could not use more to advantage without an increase of facilities. Most of the roads would need an increase in the number of their engines to properly handle any considerable increase in their cars. All roads in times of car shortage have great difficulty in procuring com-



Car Surpluses and Shortages in 1907, 1908 and 1909.

from near points becomes a negligible quantity, and new sources of supply are opened up. The amount of the commodity available at these different points may become so great as to exhaust the car supply. When the car supply is once exhausted, the demand for cars is only limited by the imagination of the shipper. No increase in freight rates is possible to restrain this demand, and he is impelled to demand more and more cars by his certainty that he will make large profits if only he can somehow ship large quantities of his commodity. Of course, these profits will not accrue to him if all his rivals in trade can ship as well. Such over-shipments would break the market. But considerations of this kind do not avail with a man with a grievance and eager for profit.

This extreme demand for cars occurs, of course, only in times of car shortage, and chiefly from the producers of and the dealers in the great staples—coal, grain, ore, cotton, lumber and the like. For such commodities demands are often made on different railways to supply cars to ship the same goods, causing an exaggeration of the demand which can hardly be estimated.

In a situation of this kind, all a railway can do is to avoid unjust discrimination in its distribution of cars; and this is a very difficult thing to do. It has been said that in times of car shortage, the only way in which a railway can treat all its patrons justly is to make them all equally dissatisfied—and there is much truth in the remark.

The railways are, however, trying to form rules of car

petent help to man their trains, yards and shops. Most roads would be obliged to increase their track facilities, both in the yards and on the line, before they could use any largely increased number of cars to advantage.*

It will therefore be seen, as stated above, that all the railways can do at once, when they are confronted by a car shortage, is to avoid discrimination, with all the difficulties, real and imagined, attending such a course.

When the car shortage is an ordinary one, such as may be expected every year for two or three months, this seems all that can be expected under the present circumstances. It is only when the car shortage extends over a longer period, as occurred in the car shortages of 1906 and 1907, it becomes practicable for the railways to so increase their facilities that the supply will equal the demand without the help of a change of freight rates.

There is still another way in which railways can increase the efficiency of their equipment so as to postpone or end a car shortage, and that is by moving their cars faster, by loading them heavier, and by avoiding the movement of empty cars when this does not involve undue delay. This means, of course, that there is opportunity for the railways to improve their methods in general; but it is also a matter in which the railways are very largely dependent upon the public. The railways are very anxious to load their cars full.

*It should here be noted that in acquiring new cars and new facilities, and also when they increase their force, the railways find the old law of supply and demand working against them. The price of cars and all other facilities rises rapidly, and so do rates of pay.

Certain shippers find it to their advantage to ship small lots of freight at carload rates. The railways would be very glad to have all cars loaded and unloaded promptly. Some shippers find it to their advantage to take their time in loading, to take their time in unloading, and to store freight in cars.

As may be imagined from the above statement of the general principles involved in car supply and the general conditions surrounding it, a recital of the present situation on this continent, involving, as it does, half the railways and half the cars in the world, is a matter of considerable difficulty. The reports, however, received by the American Railway Association for the latest date available—that is, up to October 13, 1909—indicate a total shortage on all the principal railways, except one, amounting to 23,431 cars. If we are right in assuming from the Interstate Commerce Commission's reports that the load moves, on an average, 242 miles, and from the American Railway Association reports that the car, on an average, now makes about 70 per cent. loaded mileage, we may assume that the average time of the round trip of a car is twelve days. To obtain this we use the best monthly record of the American Railway Association—27.2 miles per day.

As there are something over two millions of cars on the continent, the indications are that 185,000 cars are loaded every day, and this shortage of 23,431 cars is therefore a shortage of 13 per cent. This means that 13 per cent. of the freights offered are delayed one day or more before they can be shipped. But this is all that this shortage means. It does not necessarily mean any restriction in production, except in those trades where absolutely no storage is provided before shipment. It is not a shortage which can be compared with the great shortages occurring in 1906 and 1907. It should also be remembered that the present shortages are only local, and that the car supply is ample in the regions and trades where car surpluses are reported; and further, that the railways are now doing probably as much business as they did in October, 1907, when the shortages reported amounted to over 90,000 cars, or 50 per cent. of the shipments.

It is too early to fully explain how the railways of the country are carrying this immense business with so small a car shortage, but this can be said: The number of cars in the country has increased in the last two years by nearly 200,000, and the average capacity of the cars is much greater than it was two years ago. Further, the railways of the country, by increasing their facilities and by improving their methods, are able to give a better movement to their freight cars than they did two years ago. In this they now have had the assistance—even if it be the reluctant assistance—of the public in the enforcement of demurrage rules, which has undoubtedly increased the available equipment.

The present shortage appears to be on the increase. As noted above, it is not a net shortage. Although there are shortages reported on various railways amounting to this figure of 23,431, there are surpluses reported amounting to more than this—namely, to 35,977. This surplus amounts to very little compared with the surpluses which we have had in the last two years; but it will be noted that the rate of decrease in the surplus is much slower than it was one and two months ago.

There are several reasons why this surplus is not used to fill the shortages. In the first place, the surplus cars are generally stored at considerable distances from the points where shortages occur, and not infrequently represent cars in transit to meet shortages. Second, the surpluses are often in one kind of car, while the shortages are in other kinds of cars. It is, of course, practicable, in an emergency and at additional expense, to use box cars for products which are ordinarily shipped in open cars, and *vice versa*. This occurred two years ago, but the present shortage is not yet sufficient to justify devices of this kind.

No survey of the situation is adequate without an indication of the prospects for the future, at least for the im-

mediate future, and such indications are usually based on experience. Here we are somewhat at fault, for the records of car supply in the country only go back to January, 1907. All prior records are local in their character. A comparison with 1907 and 1908 would seem to indicate that the shortages will not increase much longer, and the surpluses will increase very soon. It must, of course, be considered that the records for 1908 were made at a time when the business was much less than it is now; and the records for 1907 were influenced by the panic.

The indication of this record is, however, largely confirmed by the recollection of railway men of many October shortages which have been "cleaned up" between Thanksgiving and Christmas.

On the other hand, many well-posted men believe that the present increase in production will be maintained throughout the winter, and that we are about to face another long-continued car shortage. With this view many railways are ordering additional equipment.

Among the assumptions of this paper which will not be generally accepted is the assumption that the railways of the country have made adequate provisions for the average needs of the shippers, and the assumption that the periods of car shortage are comparatively infrequent. This view may not be accepted by railways and shippers who have suffered so severely in previous car shortages that the long-continued car surplus of the last two years seems to them exceptional. There are possibly railways and shippers who have operated more months under a car shortage than under a car surplus, but this is very doubtful. Certainly, there are few shippers of freight in small lots who have had occasion to know that there has ever been a car shortage at all. The only shippers who can feel that they have really suffered in car shortages are the producers of and dealers in the great staples, and usually those staples most subject to the law of supply and demand and of which the price varies most. That there were great car shortages in the years 1906 and 1907 is denied by no one, but these shortages were wholly exceptional. The only great shortage of similar magnitude was that which followed the anthracite coal strike of 1902, when the production of that staple was absolutely discontinued for such a long time that the efforts to supply the demand with a similar staple created an extreme shortage in cars and other things. Other car shortages are remembered, as in 1901 and 1887, but none of them compared with the car shortages of 1906 and 1907; and here we should remember that the increase in industry during those periods did not equal the increase in industry of 1906 and 1907.

It is hoped that the imperfections discovered in this paper may be traced to the lack of evidence available on this very important subject. It is somewhat unfortunate that this attempt to deal with it must be made at a time when conditions are so rapidly changing. It seems, however, important that an attempt to give the present state of car supply should accompany statements of the present business situation. It is even more important that it should be appreciated that the railways are alive to the situation and are striving to meet it, even after the untoward events of the last three years.

It must not be supposed that this paper is an attack on any principle of collectivism, as opposed to any principle of individualism or *laissez faire*. Experience has shown that unregulated competition between railways is destructive, and it may well be urged that all the plans heretofore devised to meet this unbridled competition are based on collectivism. How far this principle should extend in railway and corporate affairs is hard to say. The spread of collectivist principles, however, in the affairs of a country so thoroughly imbued as ours with the *laissez faire* doctrines of the two last centuries is bound to create friction, and any attempt to bring about a better understanding of such a problem should be useful.

ROBERT S. LOVETT.

Judge Robert S. Lovett, who was elected chairman of the executive committee of the Union Pacific and Southern Pacific on September 13, shortly after the death of E. H. Harriman, was on October 21 elected also president of the Union Pacific. At the time of Harriman's death it was generally predicted that the autocratic power and responsibility concentrated on one man, by the same man holding both the chairmanship of the executive committee and the presidency, would not be transmitted, but that the directors would elect one man as chairman of the executive committee and another as president.

The election of Judge Lovett to both offices shows that not only did the directors believe that the form of organization which has been so successful in the past should be preserved, but shows also that they believe that they have found a man who is capable of taking over the great responsibilities which Harriman assumed. It is impossible not to contrast the personality and methods of work of the former head of the Harriman Lines and his successor. Harriman could by no stretch of imagination be called a diplomat; his methods were those of a born fighter and of a man who needed only his own approval of his plans. Judge Lovett is a diplomat in the best sense of the word. While Harriman made a horde of bitter enemies, not a feeling even of envy has been expressed toward the promotion of his successor. Men who have worked in close personal touch with Judge Lovett during the five trying years that he has been in New York as vice-president and general counsel for the Harriman Lines say that they have never heard him raise his voice, nor have seen him lose his temper. He is considerate of those about him to an extraordinary degree. He is always ready to listen to advice, and while he by no means always follows the advice, he rejects it in such a way that the adviser feels personally complimented.

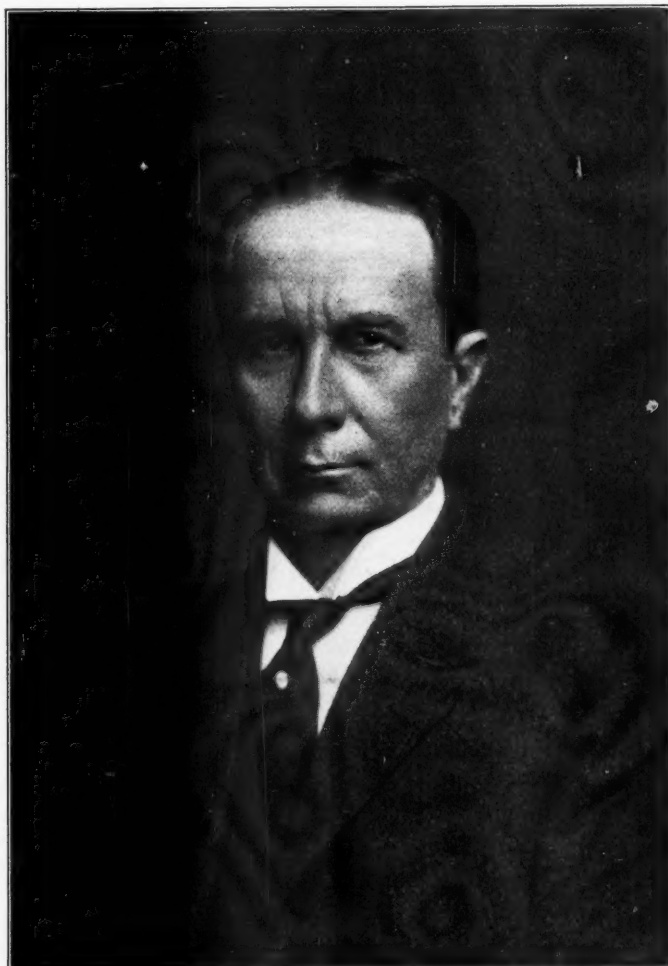
There have been a good many misleading statements made about Judge Lovett's boyhood. He was born in 1860, just a year before the outbreak of the civil war. His family at that time were considered well-to-do in that part of Texas where they lived. His father was a slave owner and, as such, a man of property. After the war, and especially during the years of reconstruction, when the boy was about 14, the family, along with the rest of the South, were hard up, but they were not of the poor, and young Lovett was given a country school education and was offered a chance by his father to study medicine at New Orleans. He refused, and asked a chance to take a course at a law school. This led to a quarrel, and the boy, refusing what his father was willing to give him, went to work for himself. It is quite true that he worked at one time for the Houston East & West Texas at pretty small pay. He worked

his way through high school, and later studied law in the office of Charles Stewart, and almost from the beginning of his practice at the bar, was a railway attorney.

He became attorney for the Gould roads in Texas when he was 29, and was in close touch with the management of those roads. In 1892 he became a member of the law firm of Baker, Botts, Baker & Lovett. This firm later were made attorneys for the Southern Pacific, but Judge Lovett's work for a number of years took him into general practice as well as into work for railways. The firm of which he was a member were general counsel of the Southern Pacific at the time that Harriman acquired the property after the death of Collis P. Huntington. Five years ago Harriman brought Judge Lovett on to New York, and had him elected vice-president and general counsel of both the Union Pacific and the Southern

Pacific. During the five years in New York his relationship with Harriman was very close indeed. During Harriman's absences he served his apprenticeship as the managing head of the Harriman Lines, and it is probably safe to say that he was more in Mr. Harriman's confidence in regard to the management of the properties in which Harriman had a direct or indirect interest than any other man. The recent election of Judge Lovett to the boards of directors of various roads to succeed Harriman is proof of this.

Besides their confidence in the man's ability to take over Harriman's duties, the directors were influenced strongly in their selection of a president for the Union Pacific and Southern Pacific by this intimate knowledge that Judge Lovett possessed of Harriman's general plan of railway management. The former president was not one to unfold his plans fully to anyone, but as general counsel for the Harriman railways, and as chief legal adviser to the man himself, Judge Lovett probably learned more than anyone else possibly could of the ambitions, and plans for carrying out these ambitions, of the greatest railway strategist and rail-



Photograph by The Misses Selby.

Robert S. Lovett.

way organizer that has ever lived.

HUNGARIAN RAILWAY PURCHASE.

The Hungarian government has a commission which examines into all purchases made for the railways (by far the larger part of which it works itself) and reports how much was the product of foreign and how much of Hungarian industry, and endeavors to point out what imported articles might have been produced at home. It has recently reported for 1907, when the railways purchased articles to the amount of \$40,770,000, of which 19½ per cent. was imported against 13.9 per cent. the year before. This was due chiefly to the fact that the railways paid \$6,000,000 for foreign coal in 1907 and only \$2,000,000 in 1906.

TEN-WHEEL LOCOMOTIVES FOR BRAZIL.

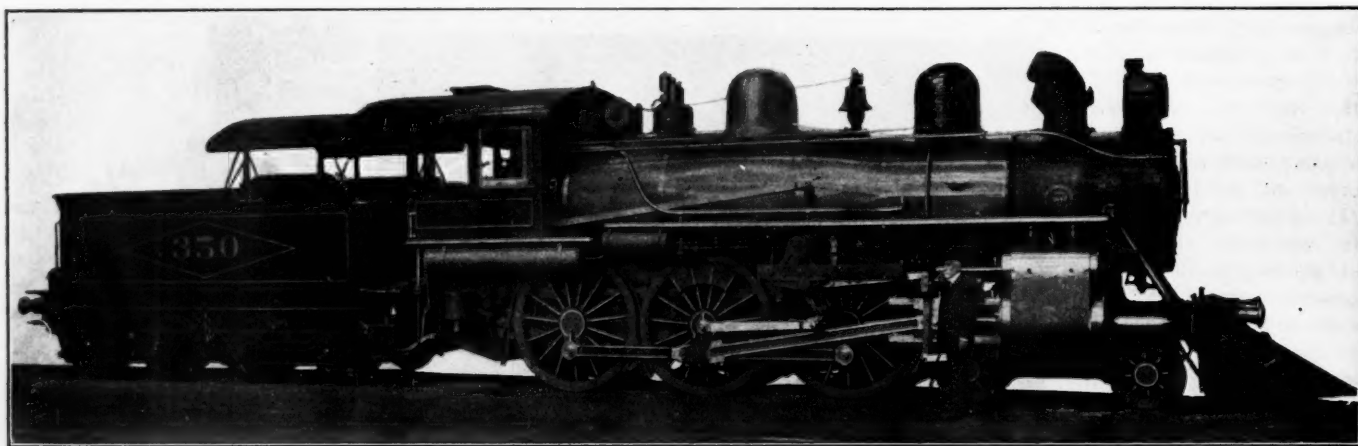
The accompanying illustrations represent two designs of ten-wheel locomotives recently built for Brazilian roads by the Baldwin Locomotive Works. The engine for the Timbo-Propria road is one of 12 intended for general road service. The line has grades of 2 per cent. and curves of 492 ft. radius, and the track gage is one meter. These locomotives exert a tractive force of 15,500 lbs.

The cylinders are placed on an incline of 1 in 48, and the steam distribution is controlled by balanced slide valves. Walschaerts motion is used and the reversing gear is of the Belpaire type, with a combined lever and screw. The frames, driving wheel centers, driving boxes, engine truck boxes and crossheads are among the more important cast steel details.

Locomotive No. 350, for the Central Railway of Brazil, is one of six engines built for passenger service. The track gage is 5 ft. 3 in. These locomotives are of special interest, as their equipment includes smokebox superheaters. This road has been experimenting for some time with consolidation freight locomotives equipped with smokebox superheaters and ten-wheeled passenger locomotives fitted with fire-tube superheaters. The selection of the smokebox type for the new engines indicates that this pattern is particularly adapted to service conditions on the Central of Brazil.

The engines under notice carry a moderate steam pressure of 160 lbs., and exert a tractive force of 22,980 lbs. As the weight on drivers is 105,500 lbs. the ratio of adhesion is 4.58.

The cylinders are single-expansion, equipped with inside admission piston valves driven by Walschaerts motion. The



Ten-Wheel Locomotive for the Central Railway of Brazil. 5 ft. 3 in. Gage.

The boiler is straight topped, with a long firebox placed above the frames. Wood fuel is used and is burned on a grate composed of plain bars and dead plates. The stack is built in accordance with the railway company's practice, and is generally similar to the Radley & Hunter type. The smokebox is short and is fitted with a low double nozzle.

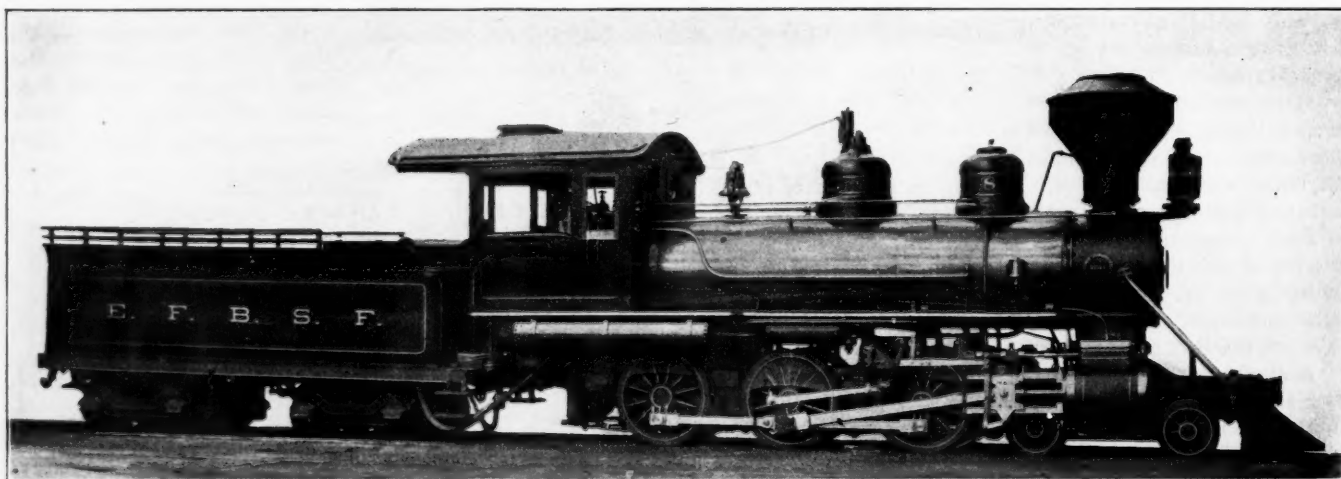
These engines are equipped with the Le Chatelier water brake, in addition to the automatic air-brake on driving and tender wheels. The boiler is fed by one injector and one pump. Owing to lack of room outside, because of the use of Walschaerts gear, the pump is placed between the frames and is driven by an eccentric attached to the main axle.

The tender frame is composed of 6-in. channels and the trucks are equipped with solid forged and rolled steel wheels supplied by the Standard Steel Works Company.

valves are 12 in. in diameter. The links are supported outside the leading drivers by longitudinal bearers, which also carry the reverse shaft bearings. The valve rods are connected to long crossheads, which slide in brackets bolted to the top guide bars. The combining levers are pinned directly to these crossheads. The piston and valve rods are extended through the front heads.

The driving tires are held by shrinkage, shoulders and set-screws. The main wheels have plain tires, the others being flanged. The wheel centers and boxes are of cast steel, as are also the crosshead bodies and main frames.

The boiler is of the wagon-top type, with a narrow firebox placed above the rear driving axle and between the frames. Cardiff coal is used as fuel; it is burned on a grate composed of water-tubes and pull-out bars, and the furnace equipment



Ten-Wheel Locomotive for the Timbo-Propria Line, Brazil. Meter Gage.

includes a brick-arch. The crown sheet is flat and is stayed with T bars hung on expansion links.

The equipment includes the Le Chatelier water brake, in addition to automatic air-brakes on driving and tender wheels. Two electric headlights are provided. The tender has a steel channel frame, and the trucks are of the equalized type with half elliptic springs. The tender wheels are of forged and rolled steel, supplied by the Standard Steel Works Co.

The illustration shows this locomotive equipped with a smoke-deflecting stack. A straight stack of ordinary construction was also supplied.

These engines display a considerable amount of high finish, paint and brass work. The principal dimensions of both classes are given in the tables.

	Central.	Timbo-Propriá.
Gage	5 ft. 3 in.	3 ft. 3 3/8 in.
Cylinders, diameter	21 in.	16 in.
Piston, stroke	26 in.	20 in.
Boiler, diameter	62 in.	48 in.
" thickness, sheets	3/8 & 1/2 in.	1/2 in.
Steam pressure	160 lbs.	160 lbs.
Fuel,	Cardiff coal.	Wood.
Staying	1 Crown bar.	Radial.
Firebox, material,	Steel	Steel.
" length	90 1/8 in.	83 1/4 in.
" width	38 "	26 "
" depth, front	68 1/2 "	54 5/8 "
" depth, back	51 1/4 "	45 5/8 "
" thickns, sds & bk	1 1/8 "	1 1/8 "
" thickness, crown	5/8 "	3/8 "
" thickns, tubeshts	1 1/2 "	1 1/2 "
" water spce front	4 "	3 1/2 "
" water slides & bk	3 "	3 "
Tubes, material	Iron.	Iron.
" thickness	No. 12 W. G.	No. 12 W. G.
" number	268	132
" diameter	2 in.	2 in.
" length	13 ft. 2 3/4 in.	11 ft. 9 1/2 in.
Heating surface, firebox	132 sq. ft.	90 sq. ft.
" tubes	1,841	809
" arch tubes	13 "	" "
" total	1,986	899
Grate area	23.5 "	15 "
Wheels, diam. driving	68 in.	45 in.
" truck	30 1/2 in.	24 1/4 in.
" tender	36 1/2 "	28 "
Journals, driving	8 in. x 9 in.	6 1/2 in. x 7 in.
" truck	5 1/2 in. x 10 in.	4 in. x 6 1/2 in.
" tender	4 1/2 in. x 8 in.	3 3/4 in. x 7 in.
Wheel base, driving	11 ft. 8 in.	10 ft. 0 in.
" engine	22 " 8 "	19 " 4 "
" eng. & tendr	48 " 1 1/2 in.	44 " 3 1/2 in.
Weight on drivers	105,500 lbs.	63,000 lbs.
" on truck	41,100 "	14,450 "
" engine	146,600 "	77,450 "
" engine and tender	215,000 "	137,000 "
Tank capacity, water	3,000 gals.	2,600 gals.
Tank capacity, fuel	7 tons.	2 cords.
Service	Passenger.	Pass. & Frt.
Tractive effort	22,980 lbs.	15,500 lbs.

Weight on drivers	=	4.59	4.06
Tractive effort			
Total weight	=	6.12	5.00
Tractive effort			
Weight on drivers	=	71.96*	81.34*
Total weight			
Trac. effort x diam. drivers	=	768.83	775.86
Heating surface			
Heating surface	=	84.51	59.26
Grate area			
Firebox heating surface	=	66.46*	10.01*
Total heating surface			
Weight on drivers	=	53.12	70.07
Total heating surface			
Total weight	=	73.81	86.15
Total heating surface			
Displacem't, 2 cys., cu. ft.	=	10.42	4.65
Total heating surface	=	190.59	193.33
Displacement, 2 cys.			
Grate area	=	2.25	3.22
Displacement, 2 cys.			

*Per cent.

INSPECTION OF BRIDGES AND BUILDINGS.*

INSPECTION OF BUILDINGS.

The bridge foreman is in and around the buildings in his district quite often, and if he does the building work he will report the needed repairs from time to time. On the usual building inspection the idea of rebuilding is seldom brought up. Even though a building is old, it can be repaired and will still serve its purpose just as well as any new building of the same type and size. The more important buildings are rebuilt in order to accommodate a larger volume of business.

The division official in charge of the maintenance of buildings has sufficient opportunities to make inspection of buildings at different times during the year, while going over the road or other business than that of inspection. This, with the information sent in by the building foreman and the employees using the buildings, seems sufficient for building inspection.

INSPECTION OF BRIDGES.

Bridge inspectors can be classified into three kinds—current, general and special inspection.

Current Inspections.—1. The section foreman making the daily track inspection should also stop and examine all bridges and culverts. The object is to discover any broken or damaged parts which might have developed during the past 24 hours, due to storm, fires, derailments, etc. No report need be made of this inspection unless something is found which impairs the safety of the bridge.

2. The bridge foreman should make bi-monthly inspection of all the bridges and culverts in his district. In this way he can keep in touch with the condition of the bridges and plan his work, so as to do first that which is most needed. Owing to floods, derailments, fires or other causes which may have slightly damaged a bridge, it becomes necessary to make repairs not included in the yearly list of repairs. Such cases should be reported to the bridge foreman.

3. Reports from the foregoing current inspections will be received from time to time by the division foreman or supervisor. These will indicate to him which bridges need attention. He should then make inspection of such bridges and decide what shall be done to keep them in safe condition, making a report of the work necessary to his immediate superior, and he in turn to the general official in charge of the maintenance of bridges. It would be of no advantage to use any special form for these reports, and they should be made by letter.

General Bridge Inspection.—This might also be called the annual bridge inspection. It should be made annually, and during this inspection all recommendations for repairs and renewals for the following year should be made. There should be on this inspection the general bridge inspector, division foreman, or superior, and the district foreman.

The general bridge inspector acts as a representative of the chief engineer and the engineer of bridges. He receives direct instructions from these men and should carry out their ideas in making recommendations. This will also tend to give uniformity to the maintenance of bridges over the entire system.

The division foreman and the district foreman know the local conditions at each bridge, which are very important in determining what repairs should be made, or if the bridge should be rebuilt. The current of a stream may have some peculiar action, and in case of a pile bridge there may be some difficulty in keeping it in line, or perhaps the bridge heaves in winter. These, and many other defects, cannot be discovered by an inspector going over the road, unless he happens to arrive at one of this class of bridges just when such defects are apparent.

The chief engineer or the bridge engineer may desire to

*From a committee report to the American Railway Bridge & Building Association.

investigate personally the more important items of rebuilding, in which case another inspection will be made by one or both of these men, accompanied by the bridge inspector, who will be prepared to give his reasons for the recommendation.

There should be a sufficient number of general bridge inspectors, so that the entire system can be gone over during the time from May 1 to October 31. This applies to the roads in the north; in the south, where the climate is favorable for bridge inspection the entire year the above time limits need not apply.

The notes of the general inspector should be kept in a book made for this purpose. Such books, samples of which were received by the committee, can be divided into three classes, noted below as A, B and C.

A. On one page the bridge number, class, length, number of repairs and height of four or five bridges is given in vertical columns at the top of the page. Just below this, on the same page, the different items which are to be considered at each bridge are indicated by means of horizontal headings. The opposite page has horizontal and vertical lines, so that each pile, stringer or other part of a bridge has a definite square in which its conditions can be noted.

B. One page is the same as in class A, it being the page bearing the number and description of four or five bridges and the items to be considered. The other page is blank, except for the horizontal lines, to be used in making notes.

C. The bridge number, class, length and height are given on one page, in a horizontal line. The other page has only horizontal lines, or is divided into two vertical columns, one for the recommendation and the other for the bill of material.

In the front of each book there should be instructions for making inspections. These will indicate in a general way how the notes are to be written and what is necessary in order to make a good inspection. On each page of the book there should be spaces for the general characteristics of the bridges, such a number, date, class, length and height. The remainder of the page should be left blank for the inspection notes. Each page should also have a heading showing the name of the division, date, name of the inspector and the stations between which the bridges on that page are. This form of a book will allow considerable freedom, and such notes can be made as will apply to the bridge under consideration.

Special Inspections.—The general bridge inspector should have about five months of the year in which to make special inspections. In the northern country it is well to have this time in the winter, when he can get under the bridges on the ice. Another good time for special inspection is while a bridge is being painted, because then the inspector can use the staging swung by the painters.

These inspections are to include all the large bridges, espe-

cially the older ones, the object being to spend considerable time on each bridge and a very thorough inspection made. During the annual inspection all bridges should be noted that need such inspection.

CHARLES M. HAYS.

Charles M. Hays, the new president of the Grand Trunk, was born in 1856 at Rock Island, Ill. After several years' residence in St. Joseph, Mo., the family moved to St. Louis, Mo. Mr. Hays was educated in the St. Louis public schools, and at the age of 17 entered railway service as a clerk in the passenger department of the Atlantic & Pacific, now part of the Frisco, in St. Louis. He took hold of the railway business quickly, and in 1877 entered the service of A. A. Talmage, then vice-president and general manager of the combined

Wabash and Missouri Pacific systems, as private secretary. In the performance of his duties in this position his opportunities to acquire a knowledge of the railway business were unlimited, as he came in contact with many of the master minds of the railway service, at the time when the railways of the West were rapidly developing, owing to the large immigration and the settling up of the country west of the Mississippi river.

When the Wabash was separated from the Gould System in 1884, he took a similar position with the old Wabash, St. Louis & Pacific, and later on, in 1886, was appointed assistant general manager under A. A. Talmage, who was general manager for the receivers. On the death of Mr. Talmage in July, 1887, Mr. Hays was appointed general manager of the Wabash Western, comprising all the lines west of the Mississippi river, and that portion of the lines east between Chicago and Detroit—the other portions of the system remaining in the hands of receivers. Mr. Hays was therefore a general manager at the early age of 30 years. On the consolida-

tion of the Wabash Western and Wabash, including all the lines comprising the present Wabash, he was appointed general manager of the entire system.

When Col. J. F. How retired in 1894 he was also elected vice-president, combining the offices of vice-president and general manager.

On December 31, 1895, he resigned his position with the Wabash to become general manager of the Grand Trunk, then comprising a mileage of 4,185.

During one year (1901) Mr. Hays was president of the Southern Pacific, which position he resigned when the property changed hands.

The thirteen years served with the Grand Trunk as general manager and as second vice-president and general manager (to which position he was elected in 1902) have been years of very marked development of the Grand Trunk. The orig-



Charles M. Hays.

inal Grand Trunk has not only been practically rebuilt, but its terminal facilities have been extended and improved, and its earning capacity increased by the reduction of grades, construction of second track, heavier bridges, and the laying of heavier rail throughout. In addition, increased mileage has been added by the control of the Central Vermont, 531 miles; also the absorption of the Canadian Atlantic, extending from Swanton to Depot Harbor, with branches, 462 miles; also the joint control of the Detroit & Toledo Shore Line, extending from Detroit to Toledo, 79 miles.

The number of miles of double track added to the Grand Trunk during Mr. Hays' administration has been 303 miles in Canada and 330 miles on lines in the United States west of the Detroit and St. Clair rivers.

The earnings of the company within this period have increased from \$22,759,195 in 1896 to \$39,574,653 in 1908, or 57.51 per cent. The net earnings increased from \$5,713,553 in 1896 to \$9,410,359 in 1908, or 60.72 per cent. The financial position of the company has been very greatly improved, as the stocks are to-day selling at an increased value of about \$100,000,000 as compared with their market value in 1896, the first year of Mr. Hays' administration. The credit of the company is now at a high point, as indicated by the market value of the shares, many of which, prior to 1896, were receiving no dividends whatever.

The most important undertaking, outside of the direct operation of the Grand Trunk, entered into by the company has been the promotion, under Mr. Hays' direction, of the Grand Trunk Pacific, extending from Moncton, N. B., to Prince Rupert, B. C. (one of the best ports on the northwest coast of British Columbia), via Quebec, Winnipeg and Edmonton, including branches from North Bay, the present northerly terminus of the Grand Trunk, to a junction with the National Transcontinental, being that portion of the system to be constructed by the government and leased to the Grand Trunk Pacific, extending from Moncton to Winnipeg; with branches from Fort William to Lake Superior Junction, a point on the National Transcontinental, from Regina to a point on the Grand Trunk Pacific, from Calgary and Battleford to junction points with the main line of the new Grand Trunk Pacific east of Edmonton.

The construction of the new line is indorsed, and the successful operation of it guaranteed, by the Dominion Government, while a considerable portion, Winnipeg to Moncton, N. B., is being actually built by the government, to be leased to the Grand Trunk Pacific for a long term of years. The total mileage is about 5,000 miles, and the total expenditure contemplated is in the neighborhood of \$150,000,000. When completed, the Grand Trunk system will own, operate and control in the neighborhood of 10,255 miles of railway.

In temperament Mr. Hays, like most strong characters, is very self-possessed, seldom showing irritation or anger; his capacity for work seems unlimited. Always at his desk by 9 o'clock, when at headquarters, he sets a pace that some of his official staff find difficulty in maintaining, and when on the road, on inspection trips, he is usually the first up and out, looking over the company's property and taking a walk, of which he is very fond, before breakfast. His persistency is proverbial among his friends, and he is seldom known to "let go" as long as there is anything to be gained by holding on. He is a governor of McGill University, the leading educational institution of Canada, as well as being a member of the board of management of the two large hospitals, the Royal Victoria and General Hospital, in the work of which he is deeply interested.

The French State Railways have ordered locomotives of the Pacific type of the Creusot and Fives-Lille works. The American nomenclature for types of locomotives seems to prevail in Europe now.

RAILWAY SIGNAL ASSOCIATION.

We continue from last week the report of the annual meeting, held at Louisville, Oct. 12-14.

MECHANICAL INTERLOCKING.

Committee No. 2, on mechanical interlocking, reported having considered three principal subjects: (1) harmonizing reports of committees 2, 3 and 4; (2) pipe connections to home signals without slots, and (3) methods of insuring return of distant signals to the normal position. The harmonizing process has been completed as far as Section 20 of the specifications, and the specifications are again printed with marginal references to the paragraphs in the old form, and to those in the specifications made by the other committees. As to subject No. 2, the committee has not been able to make as full investigation as is desirable, and therefore recommends tentatively that on lines where automatic signals are used or will be used, every high-speed signal should be power operated; that in other places ordinary pipe connections are sufficient; that wherever high-speed is the general rule signals should be semi-automatic, except that slotted mechanical pipe connected signals should be used at drawbridges, and at certain other points where they can be installed cheaper than the power type; and that straight connected mechanical signals are suitable for governing yard movements, etc. Power operated signals cannot be recommended at places where a repairman is not at all times available.

On the third subject the committee had not been able to do anything.

This committee consists of C. J. Kelloway, chairman; L. C. Hartley, vice-chairman; F. H. Buchanan, W. F. Cook, C. H. Durvin, C. E. Goings, E. C. Graham, Harry Hobson, T. A. Jones, C. F. Jones, J. B. Latimer, H. F. Lomas, R. E. Trout, Chas. Stephens, J. I. Vernon and W. B. Wetherbee.

The foregoing was the first report taken up. After a desultory discussion of some of the details, the following changes were adopted and sent to letter ballot. Paragraph No. 200 changed so as to include horizontal cranks; paragraph 265 so as to include concrete foundations; paragraph 340, the note cut out; paragraph 310, clause *d* changed so as to provide locking in either position; paragraph 435, clause *b* clarified. Clause *d* under this specification was protested against as an unreasonable requirement, but no formal action was taken. Paragraph 950, the note following clause *e* was so changed so as to simply require detailed drawings.

The report of this committee on subject No. 2 was accepted as a progress report and the same action was taken on subject No. 3.

POWER INTERLOCKING.

Committee No. 3, reporting on this subject, held three meetings during the year. At Buffalo, May 13, a two days' conference was held with representatives of four signal manufacturing companies, the American, the Federal, the General and the Union, and there was a full discussion of power interlocking and especially of the different methods of "indicating." This committee has co-operated with the others in harmonizing the specifications.

A two-page discussion of methods of indication is presented in the report, but no conclusions are reached.

On the question of a substitute for the mechanical bolt lock, the committee also has had some discussion, but makes no recommendation. The code of specifications for power interlocking, as harmonized with the other codes of specifications, is presented in full in the report.

This committee consists of B. H. Mann, chairman; W. P. Allen, vice-chairman; W. H. Arkenburgh, Alexander Brown, Caleb Drake, E. A. Everett, J. A. Johnson, E. W. Kolb, W. A. Bartley, F. B. Wiegand, R. C. Siegel, R. T. Steele, I. S. Raymer, J. A. Hoffe and W. H. Harland.

This report, the discussion of which immediately followed

that of committee No. 2, was subjected to very little criticism. The specifications dealing with gasoline engines were modified to include a clause requiring an intake from the atmosphere when necessary to prevent the engine from being damaged by sulphuric acid from storage batteries. The specifications as presented were adopted, and the discussion of "indication" was accepted as information. It was the understanding that the specifications should be changed, wherever necessary, to conform to the changes which had been made by the meeting in its discussion of the specifications for mechanical interlocking. The committee had considered specifications for electro pneumatic interlocking, but this subject was referred back.

SUBJECTS AND DEFINITIONS.

Committee No. 7, dealing with this subject, C. C. Anthony, chairman, reported that the principal work in this field during the past year had been that in connection with the specifications prepared by committees 2, 3 and 4, and all of the members of Committee No. 7 had taken part in the work of Committee No. 1 (on the subject of standards), and therefore had been able to attend to all questions arising in the harmonizing process concerning the style and meaning of terms. The committee decides against the use of the word "function," as used to signify a switch, a signal, a lock, etc., and recommends "operated unit" instead. As between the terms spectacle and semaphore casting, the committee recommends "semaphore spectacle." The terms blade and blade grip are approved. The word doll, as used for an upright on a bracket signal, is disapproved, and the committee recommends the terms signal mast, bracket mast and bridge mast for the uprights to which the signal arm is attached, and "bracket post" for the main support of bracket signals.

This report was adopted and ordered submitted to letter ballot.

STORAGE BATTERIES.

The special committee on storage batteries, A. H. Yocum, chairman, supplementing the quite full report presented last year (page 282, vol. 5), made a report presenting standard drawings for storage jars and accessories for automatic signal work, and also the same for interlocking work.

This report was presented by Mr. Yocum (P. & R.) A number of members asked for further information concerning the dimensions shown in the drawings presented, and, after a long discussion, showing that practice was still rather unsettled and therefore not conducive to satisfactory formulation of standards, the report of the committee was adopted by a very small vote.

AUTOMATIC STOPS AND CAB SIGNALS.

The first business on Thursday was the presentation of the report of Committee No. 6 on automatic stops and cab signals. The committee presented a revision of the requisites of installation approved last year, and also a separate code of requisites for electric lines, carrying passengers only. The committee discusses the use of automatic stops with cab signals, but without external signals, and holds that no such system has been shown by actual test to be sufficiently reliable for an engineman to depend on. The advantages of a cab signal system without external fixed signals, if constructed according to the severe requisites of installation recommended by the association, are set forth by the committee as follows:

(a) Signal indications would not be obscured by weather conditions.

(b) Signal indications would be simple, as only the signal for the train governed would be displayed in the cab.

(c) Signal indications would be constantly displayed before the engineman.

And the disadvantages of a cab signal, without fixed signals, would be:

(a) If the cab apparatus fails the train would have to proceed over the entire division without signal indication.

(b) In case of a wreck the evidence as to the signal indica-

tion would probably be destroyed and the responsibility for the wreck could not be placed.

(c) There would probably be confusion in operating, due to the difficulty of indicating the limits of the danger zone, and the point at which the signal indication applies.

(d) As signals are but one of the many things that an engineman must observe, it is necessary that a sharp lookout be maintained at all times, and a cab signal would cause a continual diversion of the engineman's attention from the outside to the inside of the cab.

As to the desirability of using automatic stops with an external fixed signal system, the committee holds that if they conform to the requisites of installation they will in particular locations be highly desirable, and there is no doubt in the mind of the committee that they would be a valuable adjunct. When located correctly they would reduce the number of accidents which occur from unfavorable weather conditions and physical incapacity or negligence of enginemen. . . . An indiscriminate installation of automatic stops would seriously decrease the operating capacity of the road or compel a very large increase in the cost of the signal installation without a commensurable return for the money invested.

The automatic stop must not be regarded as a device for habitually controlling the train; on the contrary each operation of the stop should require an explanation from the engineman why he was not properly controlling his train. Used in this way it has proved a valuable adjunct on certain electric lines of fast and dense passenger traffic where inspection has been exceedingly thorough and unfavorable weather conditions have been largely eliminated.

Conclusions.

The committee recommends (1) That the requisites of installation set forth in this report outline the necessary qualifications for automatic stop and cab signal systems (2) That in the present state of the art the automatic stop and cab signal should be used only as adjuncts to a fixed signal system and then only when the requisites of installation as set forth in this report are complied with.

W. J. Eck, chairman; A. R. Raymer, vice-chairman; H. Baldwin, D. M. Case, G. H. Dryden, G. B. Gray, C. W. Johns, J. V. Young, W. C. Smith, W. J. Scott, L. Slatery, J. W. Peck, H. A. Logue, R. C. Johnson.

Mr. Eck in presenting this report called attention to a few errors in it as printed, and moved the acceptance of the revision which the committee had offered of the requisites adopted last year. The principal discussion was on requisite No. 1 which is that apparatus must be so constructed that a failure of any essential part will cause the display of a stop signal indication, and also the placing of the automatic stop device in position to stop the train. Mr. Waldron (Interborough Rapid Transit, New York City) said that automatic stops have been in use eight years and are now in use on four roads, under the exacting conditions of a dense traffic. As now installed, these stops meet these exacting conditions. Within the past year three roads have put in stops or have added to their installations, and have ignored this association. To carry a dense traffic with safety an automatic stop is a necessity. Can a road afford to spend millions for new tracks when by spending thousands it can get the same results by more fully utilizing the tracks? By the use of automatic stops one road (meaning the Interborough) has rearranged certain signals and abandoned a proposed expensive rearrangement of tracks.

Why this five-miles-an-hour requirement? The automatic stop is reliable. It has now been used on the Interborough five years and at some places where there are 1,500 trains daily, and there has not been one failure of the automatic stop to perform its function properly. Condition No. 1 will absolutely prohibit the installation of stops of this character (because the breaking of a trip would result in the failure to stop a train). By using the automatic stop to insure safety

and by adopting at certain places a seven-block overlap we have increased the capacity of our road 10 per cent.

If it be said that these requisites are for the average road which now does not feel the need of automatic stops, why should we be so strenuous to act in relation to conditions which are in the somewhat distant future? The mechanical trip can be made more reliable than our ordinary automatic signals to-day.

Criticism being made that the association should not say at what reduction of speed an engineman may be trusted to run past a stop signal, the meeting, after some discussion, voted that requisites Nos. 1 and 2 should read blank miles an hour instead of five miles an hour.

On motion of Mr. Shaver, the meeting voted to cut out the requisite that where track circuits are used, an automatic stop system must give protection against a broken rail, for the reason that track circuit apparatus does not always reveal a break in a rail.

After further discussion and the expression of the view that these requisites were in the nature of a discussion, and not to be looked upon by anyone as representing perfection, the meeting voted to accept the requisites for steam railroads, as a progress report. The requisites for electric lines were then accepted in the same way.

WIRES AND CABLES.

The special committee on this subject reported first on the subject of joint inspection of wires and cables. Conferences had been held with the Wire Inspection Bureau and the Electrical Testing Laboratories of New York city, and the committee reports the terms on which these establishments are prepared to make inspections of wire and insulation. The Wire Inspection Bureau, 208 Fifth avenue, makes regular tests every week at each of 25 factories, which are named in the report.

The committee has considered the subject of chemical analysis of rubber insulating compounds, but has not gone far enough to report results.

The committee submits codes of specifications for galvanized iron bond wire, for iron line wire, and for steel signal wire, galvanized.

The committee believes that the inspection of wires and cables can be managed by railway men better than by the established bureaus, and therefore thinks that this subject ought to be further studied. Meanwhile, if any railway wishes to employ the bureaus it should deal with them direct.

This committee consists of W. H. Elliot, chairman; E. L. Adams, vice-chairman; W. L. Dryden, James Heywood, E. E. Mack, G. S. Pfisterer, J. D. Phillips, D. W. Richards, A. H. Rice, V. I. Smart, M. E. Smith, J. E. Smith, F. E. Wass, E. L. Watson, L. L. Whitcomb and J. W. Young.

The report was presented by the vice chairman, Mr. Adams, who called attention to a few errors in printing. On page 25, the diameter of coils should be 18 inches. In the discussion a change was made to the effect that a manufacturer must pay all freight charges (both ways) on wire that may be rejected.

After a brief discussion the specifications for iron bond wires were referred back to the committee. Mr. Shaver is using two kinds of bond wires, one of them copper. The specifications for steel galvanized signal wire were accepted and referred to letter ballot. These specifications end at the middle of page 29 of the committee report. The meeting adopted a revision, presented by the committee, of the paragraph on taping and braiding in the specifications for insulated wire reported last year, including the stranding table for flexible wire.

MANUAL BLOCK SIGNALS.

Committee No. 5, appointed to consider this subject, reported codes of requisites for installation for the simple manual block system; the controlled manual block system without track circuits; same, with track circuits at each station;

same, with track circuits throughout the length of the block section; and for the electric train staff system. These lists of requisites are prefaced by a page of definitions, which is an amplification of the code of definitions issued by the American Railway Association. The requisites also are fuller and more complete than those of the A. R. A.; distant signals, for example, are classed as requisites instead of adjuncts.

This committee consists of S. P. Hull, chairman; W. F. Follett, vice-chairman; J. A. Beoddy, J. P. Clark, J. R. Decker, J. F. Diefenbach, H. J. Foale, W. F. Giles, G. W. Hulsizer, W. F. Johns, L. R. Mann, W. N. Manuel, Noboru Okano, W. A. Peddle, E. B. Pry and E. J. Relph.

This report was presented by Mr. Hull (N. Y. C. & H. R.). After a brief discussion, with criticism on a number of points, it was accepted as a progress report, and the subject will be further considered by the committee during the coming year.

AUTOMATIC BLOCK SIGNALING.

Committee No. 4, reporting on this subject, presented a code of specifications, harmonized so far as possible with those presented by other committees; but for lack of time to complete the work, had prepared only a part of the desired number of paragraphs. The principal subjects dealt with are (a) drawings, (b) list of materials to be furnished by the purchaser, (c) precautions, (d) six classes under the head of field construction. The committee submits 17 additional headings for consideration during the coming year.

This committee consists of C. E. Denney, chairman; W. H. Higgins, vice-chairman; E. A. Allen, F. W. Bender, F. H. Bromley, T. N. Charles, G. W. Daves, J. M. FitzGerald, G. S. Gaunt, J. E. Gilmor, F. E. Jacobs, Henry Lavarack, A. G. Shaver, W. N. Spangler, S. N. Wight and C. P. Woodson.

This report was presented by Mr. Denney (L. S. & M. S.). The committee recommended that the detailed specifications for material adopted last year be reconsidered and harmonized with the similar work in the other specifications, and to this the meeting agreed. The specifications for field construction were accepted as a progress report.

LIGHTNING ARRESTERS.

The special committee appointed to consider this subject presents a three-page review of the conditions which have to be met in signal practice, but does not summarize its conclusions in formal fashion. The most common practice is to use the common saw-tooth arrester, fixed close to the apparatus to be protected. Choke coils are also used between the instrument and the saw-tooth arrester on the theory that the inductance of these coils will resist a sudden rush of current so as to drive it across the gap in the arrester. Grounded brass strips are sometimes placed close to the choke coils. Fuses are unpopular because when one is blown out signals are put out of service and trains are delayed. Lightning arresters are not so necessary for instruments connected to the rails of the track, but where atmospheric electrical disturbances are frequent or severe the committee thinks they should be used. Trouble is often experienced with common arresters, because conducting material gets lodged in them with dirt, so that the line wires will be partly grounded and the trouble difficult to detect. Lightning arresters for signal circuits should be capable of discharging repeatedly with unvarying efficiency, and where used on lines carrying other than low voltages some means should be provided to extinguish the arc started by the lightning discharge. On power lines this is accomplished by cooling or smothering the arc or by means of a magnetic blow-out, or by the use of a non-inductive resistance in series with the gaps. For relieving steady electro-static pressure on the line arresters should be placed all along the line, but for instruments always close to the instrument. For ordinary atmospheric disturbances the choke coil is a valuable safeguard; but a coil of 15 turns is too small. The iron core is of doubtful value. Grounded plates, placed near the choke coils, have not given much satisfaction. If

they are near enough to be useful contacts are liable to be made.

Grounded overhead wires have been used to protect long-distance power transmission lines, but these are costly. It is necessary to use wire of ample size, well grounded at frequent intervals. Plain galvanized iron wire is as good as anything. It has been found as effective strung below the line wire as when strung above, but the best practice is believed to be to put such wires higher than the line wires. The ordinary lightning arresters will not protect against direct strokes of lightning, but, fortunately, such strokes are rare. The committee believes that it is still true that poor ground connections are the cause of most of the trouble with lightning arresters. The connection should be made to permanently damp earth, and the ground line should be as straight and short as possible. It should never have loops or coils. Even coiling around a pipe may be harmful, and the wire should be plugged into a cap screwed into or on the top of the pipe. No. 6 B. & S. copper is the smallest size of wire that is suitable.

This committee consists of: W. W. Slater, chairman; J. C. Young, vice-chairman; W. E. Boland, E. M. Cutting, H. K. Furgeson, H. A. Goodridge, S. F. Graham, C. F. Hastings, M. L. Johnston, A. H. McKeen, E. W. Newcomb, P. J. Ost, F. W. Pfegling, J. L. Phillips, F. C. Stuart and Park B. Hyde.

The foregoing was accepted as a report of progress.

REPORT ON STANDARDS.

The subcommittee of Committee No. 1, directed to consider standard designs and uniform specifications, reported in substance as follows:

Large railways and systems have had standards for a number of years; some have committees working on the subject of standard designs. In the circumstances, it is obviously necessary that your committee acquaint itself with the work done, and what is being done, in this line, and also to have assurances that the standard designs as issued by the Railway Signal Association will be used, or our work will not have accomplished its purpose. With these things in view, the March meeting was held with the New York Central Lines Signal Committee, and as the personnel of this committee consists of members of the Pennsylvania, the Chicago & North Western, the Baltimore & Ohio and the Atchison, Topeka & Santa Fe, this combination represented a large mileage. We are pleased to advise that hearty co-operation was assured and the Pennsylvania and New York Central lines, the B. & O., the Southern, and other important lines, have arranged to adopt the standards already submitted to the association by this committee.

The General Specifications under each of the subjects, (1) Specifications for Mechanical Interlocking, (2) Specifications for Power Interlocking, (3) Specifications for Automatic Block Signaling, are completed up to and including paragraph 16. Owing to the fact that most of our time was devoted to the harmonizing of specifications, our standard designs have not progressed as rapidly as they otherwise would. However, the important and difficult subjects of standard spacing of signal arms and standard semaphore spectacles and height of masts received very careful and continued study, with the result that we present for your approval the following drawings:

1045 Arrangement of Signal Arms on Straight Masts.

1046 Arrangement of Signal Arms on Bridge and Bracket Masts.

Our conclusion is that the spacings shown, the length of arm, and height of masts, are best for more than 90 per cent. of the signal installations now in service, as well as for an equally large percentage of future installations. The added expense and complications involved in a wider spacing for straight, bracket and bridge mast mounting, and in some cases loss of the signal aspect as a whole, and the difficulty of

establishing standards where wider spacing is used because of varying conditions and signal locations, are the chief reasons for our recommendation that you approve those shown.

Your committee has submitted to the Executive Committee three cuts (these being patented articles) showing standard semaphore spectacles numbered 1040, 1041 and 1042.

J. C. Mock, chairman; C. C. Anthony, F. P. Patenall, J. A. Peabody.

Not concurring, T. S. Stevens.

Committee No. 1 has approved this report.

The Executive Committee approved and submitted the spectacle designs above referred to and said:

Two designs of semaphore spectacles were found necessary, because the approved scheme of aspects requires a staggered light on automatic signals; i. e., the "Stop and then Proceed" indication; and as the stagger has in every exhibit of aspects to date shown the top light to the right and the second light to the left of the mast, design "A" is placed on top and design "B" below it. They can, of course, be interchanged so far as design is concerned.

The particular forms shown were decided upon because of all those examined they were the most economical. The semaphore arm, metal, glasses and blades can be so designed that the load curves coincide, representing a curve as near correct theoretically and as good from an operating standpoint as possible. Several different upper quadrant designs are now in use and several designs of different outline from these have been tried and condemned because of unfavorable load curve characteristics. Those shown are in successful operation, and are submitted by your committee as the best, simplest and most efficient designs for the purpose; and are recommended for approval.

In view of Mr. Stevens' dissent, Chairman Mock moved that the drawings accompanying this report be accepted as a progress report; and after some discussion, this motion was carried. The members of the committee have been hard at work on other subjects during the year and could not complete this work to their satisfaction. Mr. Rudd expressed the hope that during the coming year members would try the designs presented by the committee. In order that the work of this committee may proceed faster than heretofore, it was voted that the executive committee, this year, grant it the necessary money, not exceeding \$300, to make drawings of proposed standards and have them ready for discussion at the spring and summer meetings.

PRESIDENT HARAHAH ON ELECTRIFICATION OF ILLINOIS CENTRAL'S CHICAGO TERMINALS.

J. T. Harahan, president of the Illinois Central, made the following report on the proposed electrification of the Illinois Central's Chicago terminals to the board of directors of this road at a meeting in Chicago on October 21. The report was approved by the directors and also by the stockholders at their annual meeting in Chicago on the same day:

"The subject of the electrification of the Chicago terminals of your company has received most careful and thorough investigation during the past year.

"There are no precedents at the present time where electric operation has been applied to the handling of freight traffic in large terminals, such as exist in Chicago. Up to the present time the use of electricity in heavy railway service has only been attempted where peculiar physical restrictions, such as the operation through tunnels, has been encountered. No such physical restrictions exist on the Chicago terminals.

"The existing electric installations on steam roads cover principally the movement of passenger trains, such as the cases of the New York Central and New Haven roads in and near New York City, and in a few instances the movement of freight and passenger trains for short distances through tun-

nels, such as the cases of the Baltimore & Ohio at Baltimore and the Grand Trunk at Sarnia. Installations have also been made in some instances for the handling of suburban traffic, where such traffic extends over limited distances, and is of sufficient volume to justify frequent service in small train units, but even in such cases the interest on the heavy cost of electric installation and depreciation have exceeded any economy derived from electrical operation.

"The practicability of applying electricity to the operation of large terminals such as exist in Chicago has not as yet been demonstrated, nor satisfactorily worked out. The conditions which obtain on the Chicago terminals of your company, as well as those of other Chicago roads, are peculiar in themselves, and offer greater difficulty to the practicability and successful adoption of electric operation than anywhere else in the world.

"The Chicago terminals involve the handling of mixed traffic, consisting of freight, passenger and suburban trains, using largely tracks in common, which is further complicated by heavy interchange of freight traffic between the various roads, causing frequent and complex switching movements on main lines and in yards.

"Our suburban traffic at Chicago is the only service which would in any degree be adopted to electric operation, but even in this particular service it can be readily shown to be unjustifiable at the present time. I submit below a statement of the results which are estimated to accrue if the entire suburban service were electrified, compared with the present steam operation:

Results of Operation of Suburban Business at Chicago for Fiscal Year Ended June 30, 1909.

Gross earnings	\$1,056,446
Operating expenses (32.9 per cent.)	\$872,307
Taxes (7 per cent.)	74,427
	<hr/>
Net revenue	946,734
	<hr/>
Net revenue	\$109,712
<i>Estimated Results under Electrification.</i>	
Gross earnings	\$1,056,446
Operating expenses (66 per cent.)	\$697,254
Taxes (7 per cent.)	74,427
	<hr/>
Net revenue—electrical operation	\$284,765
Net revenue—steam operation	109,712
	<hr/>
Increase	\$175,053
Estimated cost of electrification of suburban service	\$8,000,000
Interest at 5 per cent. per annum	\$400,000
Depreciation at 5 per cent. per annum	400,000
	<hr/>
Total fixed charges account electrification	\$800,000
Saving in operation under electrification	175,053
	<hr/>
Annual loss in operation under electrification	\$624,947

"Our suburban traffic is not of sufficient density to warrant the expense necessary to electrify these lines, and it is evident from the above figures that even under electrification there would not be an increase in traffic sufficiently large to offset the annual loss from operation. It simply proves that under present conditions of the cost of electrification of steam railways, where it means a replacement of a plant already installed, and serving the purpose, it is not justifiable to electrify either in whole or in part your Chicago terminals at this time.

"There is even at the present time great variance of opinion among the ablest electrical engineers as to the merits of the respective systems of electricity in use. The rapid development in the art of electric traction will doubtless result in the future in the adoption of standard methods and practices, such as have been developed in steam operation, and in a great decrease in the cost of its application to heavy railway service, which at the present time makes the use of electricity absolutely prohibitive.

"The elimination of smoke has been advanced as the prime object of the electrification of steam railways in Chicago. We have greatly reduced the making of smoke in our locomotives during the past year by the use of superior quality of coal, care in firing and discipline among our men. We have also experimented with coke to replace soft coal, and are at

the present time engaged in building coking ovens to produce a quality of coke that will be almost entirely free from smoke when used in locomotives. We are also negotiating with a view of securing a type of self-contained motor car for use on our suburban lines.

"The use of coke on our terminals in such classes of service where it would result in reducing annoyance from excessive smoke with soft coal as fuel would make a considerable increase in operating expenses of Chicago terminal. We are not unmindful of the rights of the public to be freed from the annoyance caused by excessive smoke from locomotives, but if these results can be secured by practical means, without the sacrifice of large expenditures on electrification, all reasonable demands will be met.

"On October 14, 1909, the Mayor of the City of Chicago, with a delegation of city officials called on me and submitted a proposition that the Illinois Central Railroad Company make a start on the electrification of its terminal by installing, at an early date, electric operation on its local suburban trains, on the two westerly tracks between Randolph street and Sixty-third street, a distance of eight miles, with the understanding that any further extension of electrification would not be urged beyond a reasonable extent. The city officials suggested that such a course would carry on the work gradually, but that if the city were obliged to enforce its right to require electrification by law, it might involve the electrification of all tracks within prescribed limits at a large expenditure.

"I pointed out to the mayor and the city officials that while a moderate installation, such as they requested, might satisfy the present city administration, such action would not be binding on future administrations of the city, and therefore we would be at the mercy of succeeding city officials. They requested, however, that their proposition be submitted to your board of directors, which I agreed to do, with the understanding, however, that it would be submitted without recommendation.

"In answer to the proposition made by the city of Chicago, I can only urge the same arguments as set forth above, and state further that the matter of a partial installation, such as is requested by the city, has been carefully investigated and the conclusion reached that it would not be justified for the reasons that the expenditure would not be warranted on account of the lack of density of traffic in the local suburban service, and that we hope to meet all reasonable demands that can be made in the elimination of smoke by the use of coke or other smokeless fuel, or a self-contained motor car.

"The mutual relation existing among the various railways at Chicago, owing to the extensive interchange of traffic, and the use of facilities in common, which has no parallel at any other large terminal in this country, nor in the world, will make it imperative that any change in the methods of operation, such as electrification will impose, shall be planned and executed with the joint co-operation of all the railways, in order that a system may be evolved which is practicable, and of necessity interchangeable in its operation and use.

"Attention has been frequently called to the electrical installations on the New York Central and New Haven roads at New York, pointing to the success of these experiments. While the operation, independently, of the two systems may be successful, as far as operation is concerned, yet the fact remains that the two systems are not mutually interchangeable. It is impossible, to-day, for the New York Central locomotives and cars to go upon the tracks of the New Haven road, and it has only been made possible for the electric locomotives of the New Haven to go upon the New York Central tracks after introducing complication and experiencing much difficulty and expense.

"It is just such difficulties as are now encountered between the New York Central and New Haven in New York City that must be avoided by the railways in the Chicago terminals, and from the experiences of the New York Central and New

Haven roads we have learned the valuable lesson that there must be co-operation among the various railways in this important matter before a practicable and successful electrical operation is assured.

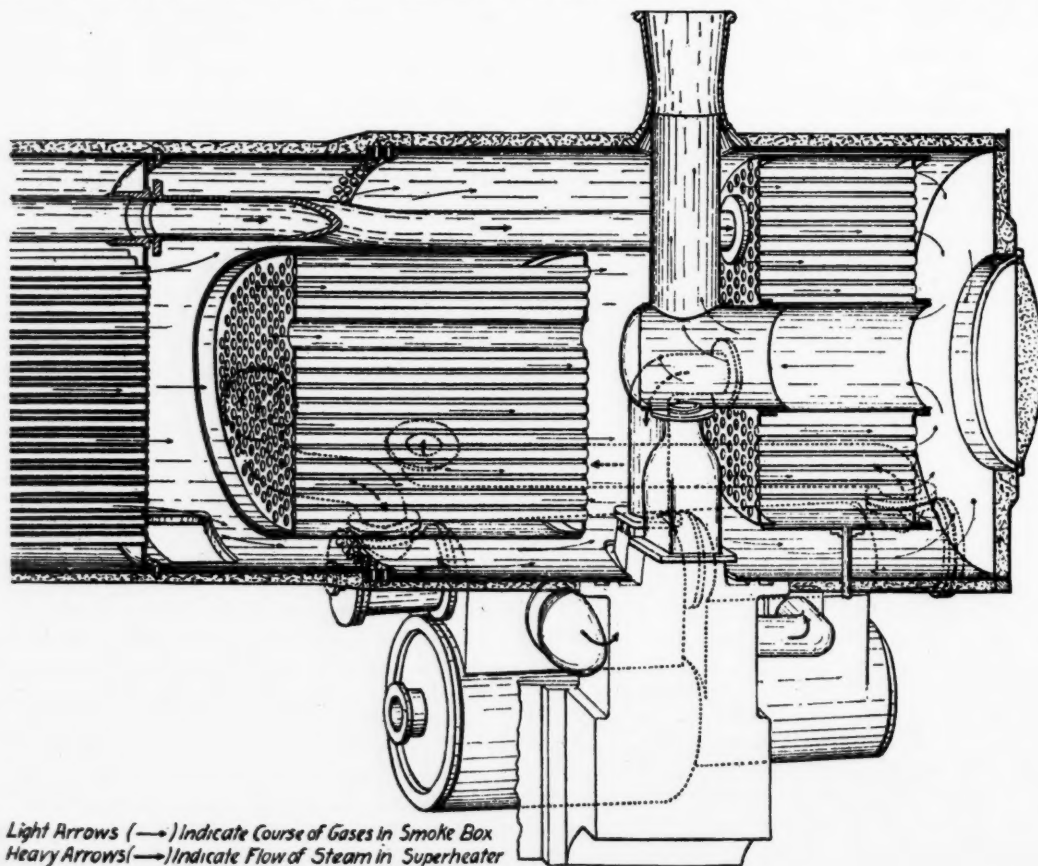
"The elevation of tracks cannot be compared with the electrification of Chicago railways, as in the former each company could proceed independently, while in the latter there must be united action on whatever systems or methods are adopted, otherwise it would make impossible the operation of the railways in the interchange of their traffic.

"After the most careful consideration of the entire subject and frequent conferences with officials who have given the matter the closest study, I have reached the conclusion that the electrification of the Chicago terminals of your company is not justified at the present time for the following principal reasons:

(1) The art of electric traction applicable to the operation of large terminals has not progressed beyond the experimental

TEST OF THE JACOBS SUPERHEATER ON THE SANTA FE.

The first superheater of the Jacobs type was applied to engine 888 on the Santa Fe, and has now been in service 11 months, requiring no extra repairs on account of the superheater and showing a fuel economy of 12 per cent. During the past summer tests of the economy of this superheater on large tandem compound freight locomotives were conducted by Prof. H. B. MacFarland, and we are now able to give the principal part of his report. The tests were made on tandem compound engine 901 equipped with the Jacobs two-stage superheater, which uses the first stage for high-pressure cylinder and the second stage for low-pressure cylinders, and on a similar engine, 923, not equipped with the superheater. In general the results show that engine 901 used 26 per cent. less fuel than all other engines of the same class not using superheaters, and a 20 per cent. decrease in fuel under engine



Light Arrows (—) Indicate Course of Gases in Smoke Box
Heavy Arrows (—) Indicate Flow of Steam in Superheater

Longitudinal Section Through Jacobs Superheater.

stage sufficiently to justify the large expenditure necessary for its application on your Chicago terminals, and it would be impracticable to operate the large freight terminals of Chicago railways, with their interchange of freight traffic and switching movements, with electric traction, as developed at the present time.

"(2) The large expenditure necessary to install electric traction on your Chicago terminals would involve fixed charges, in interest and depreciation, that would greatly exceed any economy that might result from electric operation.

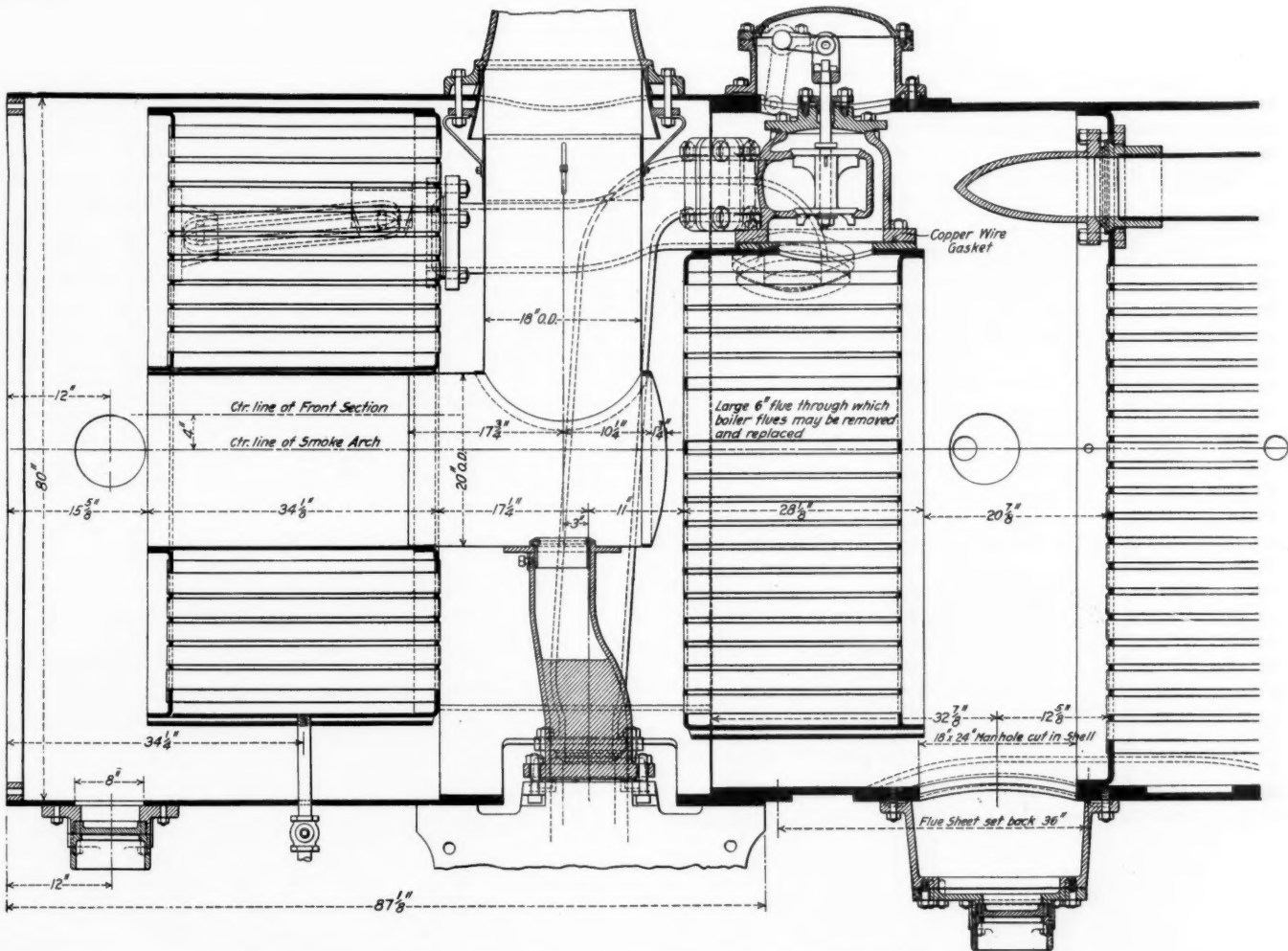
"(3) The elimination of smoke to meet all reasonable public demands can be accomplished without the use of electric traction.

"(4) It would be inadvisable at this time for any one railway in Chicago to undertake the electrification of its line, independently, before a comprehensive plan has been developed through the joint co-operation of all the lines, in order that no precedents might be established which might retard rather than promote possible future development."

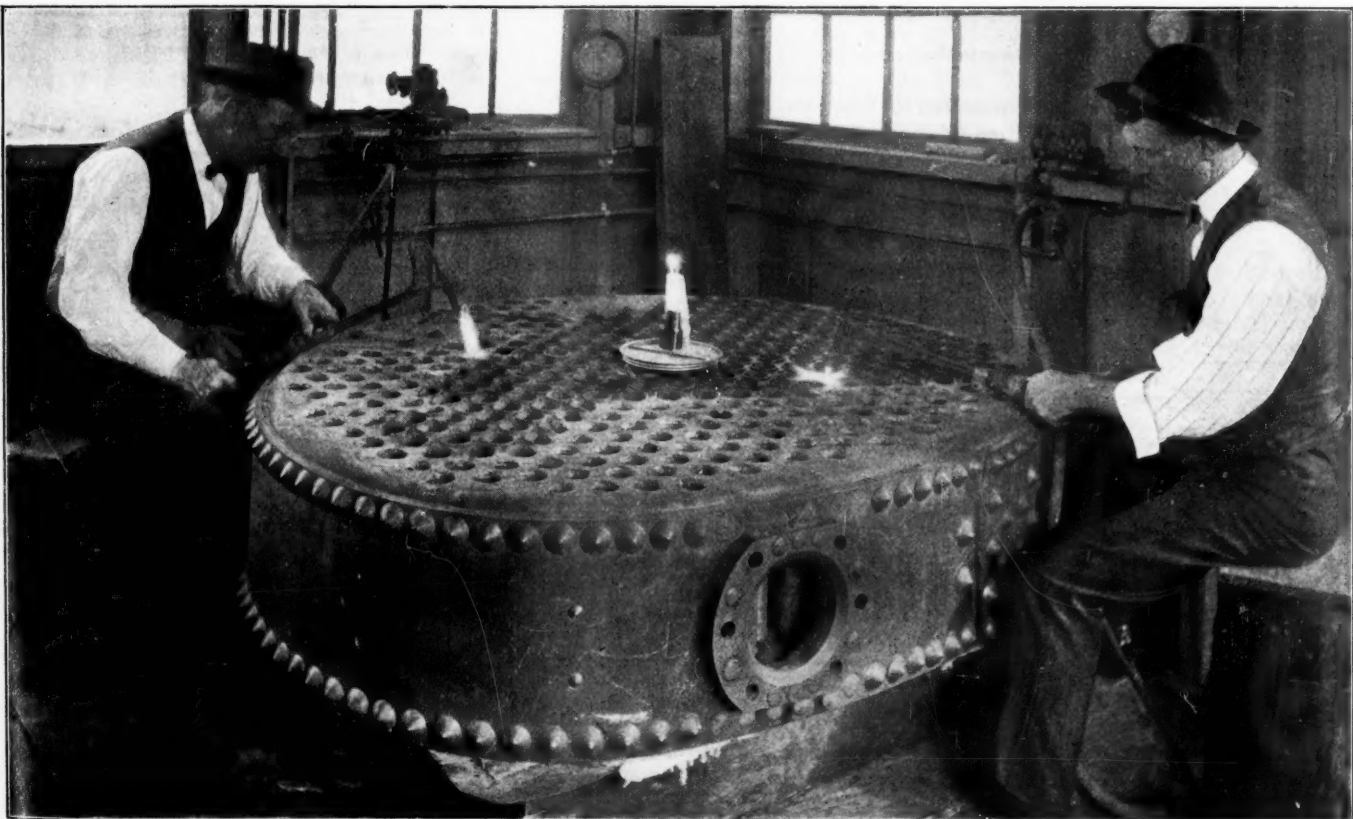
923, which was used in the test measurements. This latter engine showed a better economy than other engines of the same class for the very reason that it was operated in testing service, and experience has shown that a test engine always receives better care and its operation results in maximum economy. The tests were made on the mountain grades between Raton, N. Mex., and La Junta, Colo., the running distance being 81.5 miles.

Results of Test.				
Engine	No. 901.	No. 901.	No. 923.	No. 923.
Date of test	8-8-09.	8-11-09.	8-27-09.	8-29-09.
Tonnage	1,337	1,328	1,250	1,176
No. of cars	48	46	72	64
Thousand mi.	109.0	108.2	101.9	95.8
Time on road	6 hrs. 3 min.	7 hrs. 0 min.	6 hrs. 17 min.	6 hrs. 6 min.
No. of stops	4	10	6	4
Delayed time	1 hr. 6 min.	2 hrs. 7 min.	49 min.	36 min.
Running time	4 hrs. 57 min.	4 hrs. 53 min.	5 hrs. 28 min.	5 hrs. 30 min.
Water	152,400 lbs.	157,550 lbs.	168,750 lbs.	178,400 lbs.
Coal	21,948 lbs.	22,216 lbs.	24,717 lbs.	26,133 lbs.
Ratio, water to coal	6.96	7.07	6.82	6.83
Coal, lbs. per M.	201.3	205.3	244.4	272.9
T. M.	201.3	205.3	244.4	272.9

The best test showed that engine 901 consumed 201.3 lbs. of



Longitudinal Section Through Jacobs Superheater as Applied to Engine 898.

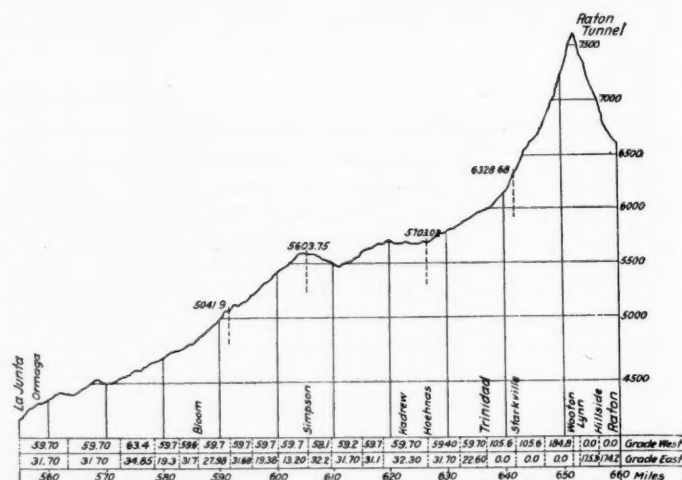


Welding Superheater Tubes by Autogenous Process.

coal per thousand ton-miles, and that the best test of engine 923 showed a consumption of 244.4 tons of coal per thousand ton-miles, that is, engine 901, equipped with the Jacobs' two-stage superheater, used 43.1 lbs. of coal per thousand ton-miles less than engine 923 without the superheater equipment. This means that an engine equipped with this type of superheater uses 17.6 per cent. less coal over this territory than one not so equipped. Figuring on a basis of equipping all engines with the superheater, it will take 21.4 per cent. more coal to run this class of engines without superheaters than with them.

An analysis of the data, taking the average results obtained from the best two tests of these engines, shows that engine 901 used 204.3 lbs. of coal per thousand ton-miles, engine 923 used 258.7 lbs. of coal per thousand ton-miles. These figures show a saving of 54.5 lbs. of coal per thousand ton-miles for engines equipped with these superheaters, or a saving of 21 per cent. of fuel, based on present practice.

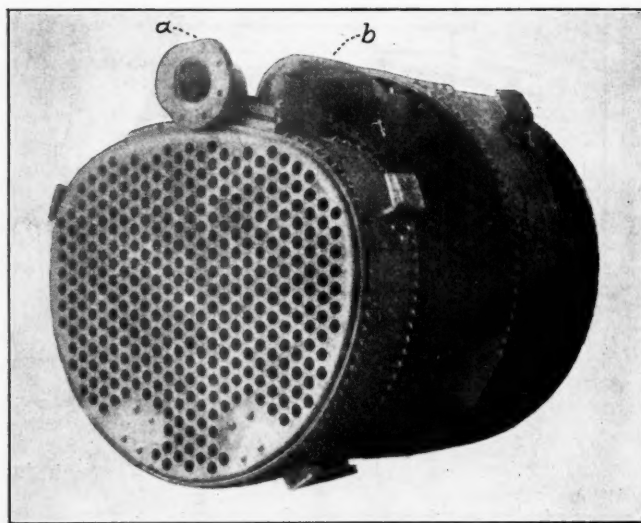
Using superheater engines as a basis of comparison, the engines without superheaters show an increased fuel consumption of 26.6 per cent. over this territory.



Condensed Grade Profile Between La Junta and Raton.



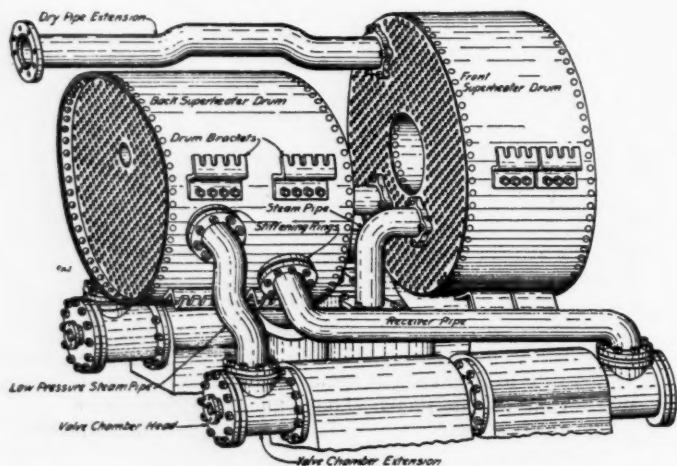
Front View of Jacobs Superheater.



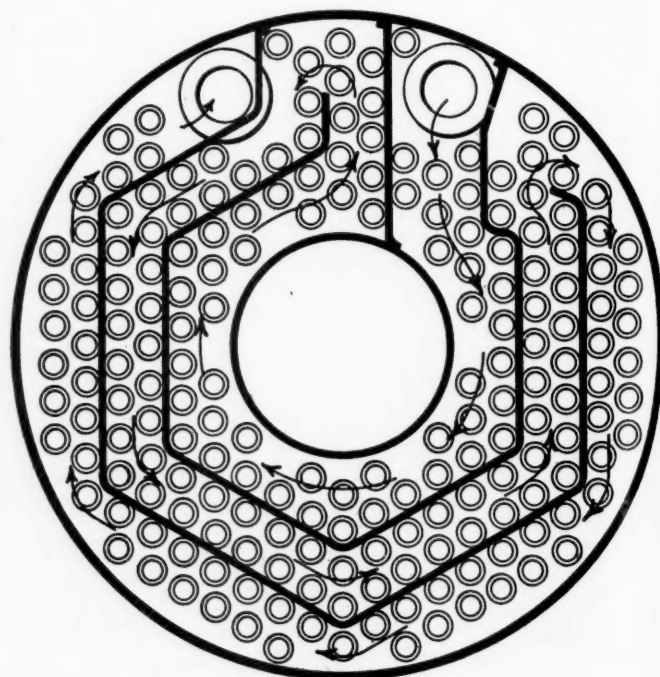
Rear View of Jacobs Superheater.

a—Dry pipe connection.
b—For steam flow between sections.

An analysis of the data shows also that besides using less coal and water per thousand ton-miles, there is an increased water evaporation per pound of coal with engines equipped with the superheaters. There may be several causes contributing to this higher ratio, but the predominate one, in my opinion, is the steadier draft on the fire of engine 901 due to the radical change in the draft appliances on the superheater engine.



Jacobs Two-Stage Superheater as Applied to Tandem Compounds on the Santa Fe.



Cross Section Through Front Section of Jacobs Superheater.

General News Section.

At Waycross, Ga., last week, 160 machinists of the Atlantic Coast Line went out on strike, the trouble being, according to the reports, the employment by the company of new men objectionable to the machinists' union.

The board of directors of the Grand Trunk have voted to give Sir Charles Rivers Wilson an annual pension of \$7,500 on his retirement from the presidency. Charles M. Hays, vice-president and general manager, will succeed Sir Charles Rivers Wilson on January 1.

At South Baltimore, Md., on Tuesday night last, one of the machine shops of the Baltimore & Ohio was badly damaged by miscreants using dynamite. Sixty men were at work in the shops at the time, but none was injured. These workmen refused to join in a strike last spring.

According to the *Houston Chronicle* a switch on the line of the Texas & New Orleans was misplaced recently with the evident intent of derailing passenger train No. 9, but the road was equipped with automatic block signals and the misplacement of the switch stopped the train by setting the signal for that block section against it.

At Washington last week there was a conference between officers of the post office department and representatives of a number of the principal railways in regard to a circular which has been sent out by the postmaster-general, asking for detailed information as to the cost to the railways of providing and running the government mail cars.

The shops of the Pennsylvania at Altoona are now running nine hours a day, and the boiler shops ten hours, and a large amount of work is on hand. For many months freight engines needing minor repairs have not been attended to, and scores of them had accumulated in the yards. With the increase in working hours now ordered, all engines will be at once put in the best condition. Large numbers of new men are being employed in the machine shops and car shops.

The Michigan Central is now using telephones for train despatching between Niles, Mich., and Kensington, Ill., 76 miles. There are 20 stations, including two at which there are no operators, all equipped with the apparatus of the Western Electric Company, which company has already equipped three other circuits for train despatching on the Michigan Central. The Western Electric has also received orders for apparatus to equip a telephone despatching circuit on the Youngstown division of the Lake Shore & Michigan Southern. The Lake Shore has been using telephones for despatching on one line for over two years and between Buffalo and Erie for about one year.

Telephones are to be used for train-despatching on the Atchison, Topeka & Santa Fe between Bakersfield, Cal., and Albuquerque, N. Mex.

The Atlantic Coast Line will shortly put in service a telephone train despatching circuit from Richmond, Va., to South Rocky Mount, N. C., 121 miles. The dispatcher is at Richmond. There will be 32 selector way stations and two local telephone stations in the chief dispatcher's office, and the superintendent's office at Richmond. These two stations will be called by means of a buzzer.

The transmission line is No. 9 (B. & S.) copper, weighing 210 lbs. to the mile. Western Electric telephone apparatus and Gill selectors are used throughout. The Western Electric Company reports that within the past six weeks three other companies have ordered telephones for train despatching circuits leading out of Richmond; the Chesapeake & Ohio, the Richmond, Fredericksburg & Potomac, and the Seaboard Air Line.

A Letter of the Late Robert Pitcairn.

The following extract is from a letter which the late Robert Pitcairn, of Pittsburgh, wrote to his younger brother, Hugh, who is now consul-general at Hamburg, Germany, when the

latter at the age of 20 was appointed superintendent of the Northern Central Railway. It was read at the Pittsburgh reunion of the Old Time and Military Telegraphers by Colonel William Bender Wilson.

Pittsburgh, Pa., February 1, 1866.

Dear Hugh: I am in receipt of your letter of the 28th ult. I rejoice very much at your appointment and trust in my heart you will succeed. * * * "There is a tide in the affairs of men which if taken at the flood leads on to fortune and fame." Now is your flood of time; if you take advantage of it you are made forever, if you miss it then it will be a more severe struggle to get the same chance again and perhaps you never will. How can you take advantage of the flood? By bearing your honor meekly. Not appearing to feel your position, but still show you have confidence in your ability. Putting on no airs, but still being decided and dignified, always remembering that your youth is against you. By keeping a close mouth and not showing your ignorance. A Pitcairn can't blow, can't talk well and his only chance is in keeping quiet. By having no confidants unless it is your brother John. By putting nothing on paper that you can't say verbally unless it is a train order. Always be careful what you write, remembering that it may appear against you when least expected. Be careful, weighing all your actions, doing nothing rash, being sure to get all the facts before you decide a question. Having no temper. You will always make a fool of yourself unless you control your temper. Having no feelings, but calmly and dispassionately weighing everything and acting earnestly and for the best interest of the company without regard to yourself. By being pleasant and making yourself agreeable to all, remembering your failing which is also mine. Talking very little with the employees, but still being pleasant to them. By a close and constant attention to business, always bearing in mind your health, which is not the best. Even the presidency of the United States would not compensate you for the loss of your health. If you are in love, say that until I succeed I will not allow it to divert my thoughts or take away my attention from any business, and, above all, when you are running trains by telegraph be very careful and not allow your mind to be diverted a single moment until you are entirely through and never leave the office an instant until you are, and as long as you are engaged in running trains to keep your mind intensely fixed on the same, always looking for the men to make a mistake and misconstrue your message. Always examine your messages, reading them often and see if a misconception could be taken therefrom, trying every message to make it more pointed, more clear and more safe. An accident would kill you. A mistake that the men or operators would discover would make them lose confidence in you, which would hurt you much. In a railway man success is the only criterion and the only way they are judged. When asked a question by the men that you are not altogether clear upon postpone your decision until you can get light and are sure. Engrave this upon your mind. Take no risks. In case of doubt take the safe course. The above is the amount of my 15 years of railway experience; it might be of benefit to you to read them morning, noon and night.

Questions and Answers on Standard Rules.*

What is a book of rules? A book preserved in the trainmaster's office under lock and key.

What is standard time? The time that always comes in the middle of a train order.

What is a wire chief? The man who waits until the dispatcher is busy and then takes the wire?

What is a trainmaster's clerk? The man who collects cigars from boomer brakemen and hands out the examination books.

Who examines the men? The night chief dispatcher.

What is a railway commission? A body of men appointed

*Extracts from a new and original code, prepared by a train dispatcher, for all latitudes in the United States.

by the state for the purpose of instructing railway officials as to the proper method of conducting their business, how to make reports, etc.

How much railway experience are they required to have? None.

What is a grievance committee? A body of worthy and well qualified technologists whose duty is to interpret ambiguous portions of agreements for the edification of the general manager and the benefit of the service.

What is a car inspector? The bane of the yardmaster's existence. He tests the air and is guaranteed under the pure food law never to move fast enough to raise a sweat.

How much time is he allowed for the air test? Four hours, but he only uses two.

What is a train? An engine or more than one engine (and caboose) run for the primary purpose of enabling train and enginemen to make 3,000 miles or more a month.

Do train and enginemen assist the despatcher in getting trains over the road when close to the 16-hour limit? They did once but the despatcher dropped dead; since which time the practice has been discontinued.

What is an operator? A graduate of a ham foundry plucked before he is ripe.

How much does he improve after he gets a job? None; he gets worse.

What are an operator's duties? To receive and deliver train orders.

Does he do so? No, he stands on the station platform until the train has passed and then informs the despatcher of its passage.

What is a switchman? A man employed for the purpose of switching cars and for providing steady employment for the car inspectors and such other duties as may be assigned to him. He fears neither God nor man.

Does he permit cars to strike each other violently? Yes, excepting in investigations, when they only strike hard enough to tell it; just enough to crack a flea.

What is a fixed signal? One that has been sent to the shop and repaired.

Why do enginemen receive copies of train orders? So they will know what engine they have.

In case of doubt what should be done? Nothing.

What is a switch shanty? A room or place representing the general manager's office; a place where switchmen meet for work and to get out time-tables, appointments, etc., and such other business as may regularly come before them.

What is an agent? A man whose duties are too numerous to mention, but whose special function is to order cars by message after the 89 report has been sent.

What should an engineer do when he arrives at a station? Grab a soft hammer and a wrench and proceed to rebuild the engine.

What should the conductor do? Report to despatcher that he is ready, sign his orders and then put in a brass or two, and then go into the caboose and give a dinner party to his crew.

When taking siding for an opposing train, what should the conductor do if the expected train fails to show up? Stay in caboose. Despatcher will hire a boy to send after him if he wants to change the meeting point.

Two Fast Trains to St. Louis.

The announcement of the Pennsylvania, two weeks ago, that on November 7 it would put on a 24-hour train between New York and St. Louis, has been seen by the New York Central; and the Central will run a similar train. It will leave New York at 2:45 p. m., and arrive in St. Louis at 1:45 p. m., with a connection to Cincinnati, arriving there at 7:30 a. m. The eastbound train will leave St. Louis at 8:45 a. m. The distance between the two cities by the New York Central Lines, according to the *Official Guide*, is 1,172 miles, which will make the rate of speed of the new trains 48.8 miles an hour. The Pennsylvania line is about 120 miles shorter, making the rate there 44.3 miles an hour. The Pennsylvania trains both ways start in the evening, so that passengers eastbound from St. Louis will be accommodated with fast trains starting both morning and evening.

The New York Central will also put on a new train to Cleveland, leaving New York at 8 p. m., and arriving in Cleveland at 7:45 a. m. This time is two hours better than the best time now made, and will be about one hour 20 minutes better than the new fast time to Cleveland advertised by the Pennsylvania.

Co-operation in the Passenger Service.*

BY JOHN FRANCIS,

General Passenger Agent, Chicago, Burlington & Quincy.

The first passenger agents' association of which we have any record met in Pittsburgh in 1855. Each road was more or less a law unto itself in the making of through rates over lines with which it had working arrangements, and the rule was adopted that when any line made a change of rates, 15 days' notice should be given to each road interested, and thereupon the general ticket agents should agree upon the proportions each road should receive. At this first meeting but 20 lines responded to the roll call. The superintendent was apparently the principal officer of the road in every department, passenger included. At the association's convention held in Baltimore about a year following the date of organization, we find but five general ticket agents present. We find among the lines present a few still known to us by the names they then bore—such as the Michigan Central and Philadelphia & Reading; but the names of the majority are unfamiliar and have been swallowed up in consolidations. At that time many coupon tickets were unnumbered. The general ticket agent not only issued the tickets to be sold, but when they were collected they were returned to him to be audited. We can readily see that the door was wide open for the head of the department to do a land-office business for the benefit of his own pocket had he been so inclined; but, to the credit of the men of that day, he it said that the revenues of their companies were as safe in the hands of their guardians as they would have been under present-day methods, where every ticket is numbered and every man's work is checked and rechecked.

A serious objection to the coupon tickets then in vogue was the practice of many purchasers of through tickets to separate the coupons and sell each at local rates, thus realizing a profit from their sale. Apparently here the scalper had his beginning, and even at that early day he was recognized as a mean individual. At the fall meeting of 1857 it was recommended that 80 lbs. of baggage be allowed each passenger free, and that the charge for excess be double the first-class freight rate. I cannot find that either of these recommendations was made effective. * * * The chief work of the general ticket agents at association meetings continued to be compilation of rates and the figuring of divisions—work that now could not possibly be performed by the general ticket agent, on account of its magnitude.

Wabash Freight Service Inspectors.

The Wabash has appointed three traveling merchandise inspectors to inspect the manner of packing, loading, billing and handling of freight, in the hope of securing better service and a diminution in the payments for loss and damage. The three men inspect the stations on practically the whole road, or nearly 2,500 miles of line, as follows: H. H. Pike, Moberly division, 861 miles; C. H. Sansom, Decatur and Springfield divisions, 742 miles; S. V. Grisson, Peru, Detroit and Buffalo divisions, 880 miles. On the Wabash, as on most roads, the trainmasters give as much attention as possible to the handling of freight but, having other important duties, they have been obliged to make this a secondary matter.

Indiana Railway Convention.

The Indiana Railroad Commission has called the annual convention of superintendents and other operating and despatching officers and employees of steam railways of the state, as provided for in a law passed in 1907, to be held at the

*Extracts from address before the American Association of Traveling Passenger Agents, Chicago, Oct. 12.

state capitol November 10. It will consider railway accidents that have taken place during the past year and the best means to prevent accidents. The roads are directed to have in attendance besides division superintendents not to exceed two trainmen for each 200 miles of road or fraction thereof whose service records and lengths of service indicate that their counsel and experience may be of benefit to the convention.

Power for Chicago Electrification.

At a meeting of the Chicago Electric Club on October 20, Samuel Insull, president of the Commonwealth Edison Company, said that his company could with its present equipment supply sufficient current for the electrification of two Chicago steam railway terminals, and that it could be furnished at lower cost than that produced in New York City for the New York Central and the New Haven railways. He said further that the charge of his company for current supplied to the surface and elevated railways in Chicago was less than that paid by interurban and city electric railways supplied from the hydro-electric power plants at Niagara Falls.

The Southern Pacific's Part in the Presidents' Meeting.

The expedition with which 11 troop trains made the round-trip of approximately 1,300 miles from San Antonio to El Paso and return (on the occasion of the meeting of the presidents of the United States and Mexico at El Paso) without error, accident or delay, and without disturbing the regular service of the road was no less a tribute to the efficiency of the railway management than to the splendid readiness of the government to safeguard the Mexican boundary within 24 hours. General Albert L. Meyer, in command of the United States forces, regarded the movement as one of the most satisfactory and expeditious that he had ever witnessed. A number of military representatives of foreign governments who were at San Antonio expressed the same view. The government, the general in command of the department of Texas, and the Southern Pacific deserve congratulations.—*Houston (Texas) Post*.

Never Put Off Till To-morrow.

An ordinance giving the Union Railroad Company the right to build a fourth track across Meridian street, Indianapolis, was called up at the Council meeting on Monday night and passed. The mayor signed the ordinance at once and the company had the crossing completed by 5 a.m. The opposing property owners, who threatened injunction proceedings, were thus outgeneraled.

Chicago Car Foreman's Association.

At the annual election held October 11 the following officers were elected for the ensuing year: President, W. O. Davies (C., M. & St. P.); first vice-president, W. B. Hall (Mather Stock Car Co.); second vice-president, George Thompson (L. S. & M. S.); treasurer, W. E. Sharp (Armour Car Lines); secretary, Aaron Kline, 326 N. Fiftieth court, Chicago.

New York Electrical Society.

The opening meeting of the season was held on October 27. G. Herbert Condict, past president of the society, delivered an illustrated address on Freight Handling by Electricity.

Traffic Club of Chicago.

Regular dining room service in the new rooms of this club, on the eighteenth floor of the La Salle hotel, began on Thursday, October 28. The dining room was formally opened to members of the club on October 27, a buffet luncheon being served by the club from noon to 2 p.m. The entertainment committee announces that it has arranged to hold regular monthly meetings and luncheons for members on November 2 and December 7, 1909, and January 4, 1910. At the first

of these meetings Frank Smith, cashier of the Corn Exchange National Bank of Chicago, will give a stereopticon lecture on "Old Chicago." The annual dinner of the club will be held on the evening of February 8, 1910.

National Industrial Traffic League.

The annual meeting will be held at Hotel La Salle, Chicago, at 10.30 a.m., November 11. Committees will make reports on a large number of subjects of interest.

Canadian Society of Civil Engineers.

A meeting of the general section was held on October 28. A paper by E. I. Wenger on Determination of Train Resistance, illustrated by lantern slides, was presented.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.; May 10-13; Indianapolis.
 AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Scranton, Pa. June, 1910; Niagara Falls, Ont.
 AMERICAN ASSOC. OF LOCAL FREIGHT AGENTS' ASS'NS.—G. W. Dennison, Penna. Co., Toledo, Ohio.
 AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.—R. W. Pope, 33 West 39th St., New York; second Friday in month; New York.
 AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 24 Park Place, New York; Nov. 17; Chicago.
 AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—S. F. Patterson, B. & M., Concord, N. H.
 AMERICAN RAILWAY ENGINEERING AND MAINT. OF WAY ASSOC.—E. H. Fritch, Monadnock Bldg., Chicago. March 14-17, 1910; Chicago.
 AMERICAN RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L. S. W. Ry., St. Louis; second Tuesday, May; Memphis, Tenn.
 AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony Building, Chicago.
 AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. Edgar Marburg, Univ. of Pa., Philadelphia.
 AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., N. Y.; 1st and 3d Wed., except July and August; New York.
 AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., N. Y.; 2d Tues. in month; annual, Dec. 7-10; New York.
 AMERICAN STREET AND INTERURBAN RAILWAY ASSOCIATION.—B. V. Swenson, 29 W. 39th St., New York.
 ASSOCIATION OF AM. RY. ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago; June 29, 1910; Colorado Springs.
 ASSOCIATION OF RAILWAY CLAIM AGENTS.—E. H. Hemus, A. T. & S. F., Topeka, Kan.; May; Nashville, Tenn.
 ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, Wisconsin Central Ry., Chicago. May 16-20, 1910; Los Angeles.
 ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 24 Park Place, N. Y. Dec. 14-15; Chattanooga.
 CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tues. in month, except June, July and Aug.; Montreal.
 CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, Montreal, Que.; irregular, usually weekly; Montreal.
 CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo.
 FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Rich., Fred. & Pot. R. R., Richmond, Va. June 15, 1910, California.
 INTERNATIONAL MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.
 INTERNATIONAL RAILWAY FUEL ASSOCIATION.—D. E. Sebastian, La Salle St. Station, Chicago; May; Chicago.
 INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.; May; Cincinnati.
 IOWA RAILWAY CLUB.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August; Des Moines.
 MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony Bldg., Chicago.
 NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tues. in month, ex. June, July, Aug. and Sept.; Boston.
 NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August; New York.
 NORTH-WEST RAILWAY CLUB.—T. W. Flanagan, Soo Line, Minn.; 1st Tues. after 2d Mon., ex. June, July, August; St. Paul and Minn.
 RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, Pittsburgh, Pa.; 4th Friday in month, except June, July and August; Pittsburgh.
 RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, 12 North Linden St., Bethlehem, Pa.
 RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio; May 16-18; St. Louis.
 ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.
 ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug.; St. Louis.
 SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Norquist, Chicago.
 SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. H. O'Donnell, Bogalusa, La.
 SOUTHERN AND SOUTHWESTERN RY. CLUB.—A. J. Merrill, Prudential Bldg., Atlanta; 3d Thurs., Jan., April, Aug. and Nov.; Atlanta.
 TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R. R. R., East Buffalo, N. Y.
 WESTERN CANADA RAILWAY CLUB.—W. H. Roseyear, 199 Chestnut St., Winnipeg; 2d Mon., ex. June, July and Aug.; Winnipeg.
 WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony Bldg., Chicago; 3d Tuesday each month, except June, July and August; Chicago.
 WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, Monadnock Bldg., Chicago; 1st Wednesday, except July and August; Chicago.

Traffic News.

The number of cars of flour sent out from Minneapolis on Wednesday, October 20, is reported, as 556, containing 110,560 barrels. This is said to be the greatest day's business ever recorded.

According to Los Angeles papers, 25,000 colonists have arrived in that city in two weeks and others are still coming. Great as is the present movement, it is expected to be still larger next spring.

The Chicago Association of Commerce has appointed a committee to confer with officers of the Chicago railways and protest against the proposed charge of 2 cents per 100 lbs. for carrying freight through the tunnels.

According to the *Harrisburg Telegraph*, slow freight trains were kept moving throughout the main line of the Pennsylvania last Sunday, the first time in three years that this movement has not been discontinued on the Sabbath.

According to a press dispatch from Baltimore, the West Virginia coal companies are now losing business on account of the scarcity of cars. The Consolidated Coal Company was reported last Saturday as being 100,000 tons behind in its deliveries.

Press despatches announce a passenger rate war in Mexico, and the National Lines, to get business away from the old line (the Mexican Railway), between Mexico City and Vera Cruz, have announced a rate of \$5 for the round trip. The regular one-way rate has been \$14.

The New York Central Lines for the first 25 days of this month handled a total of 1,505,414 carloads, which is the largest movement for any similar period in the history of the road. This is an increase of 183,345 loads over the same period last year, and is also an increase of 63,000 loads over October, 1907.

The number of loaded cars received and forwarded at Indianapolis in the week ending October 23 was 26,086 against 23,353 in the corresponding week of 1908, 24,383 in 1907 and 23,077 in 1906. Freight traffic at Indianapolis is said to be now fully up to the standard of 1907. It is evident that the largest movement has not yet been reached as comparatively little grain is yet moving.

The Michigan Central is bidding for freight business from Chicago to Havana, Cuba. A car is started from Chicago every Tuesday afternoon to connect with the New York & Cuba Mail Steamship Company. This car will leave Chicago at 8 p.m., reach New York the next Friday morning, and make connection with the steamer sailing Saturday; and freight will reach Havana the seventh day from Chicago.

The ferryboats of the West Shore Railroad, running between Weehawken, N. J., and the lower part of New York City, will, after the end of this month, land in New York at Cortlandt street instead of Desbrosses street. The West Shore secures landing privileges at the Pennsylvania ferry at Cortlandt street because of the divergence of a part of the Pennsylvania's traffic to the Hudson tunnel.

The Northern Baptist convention, representing 38 states, at its recent convention in Portland, Oregon, voted to establish a committee on transportation, consisting of five members, to deal with the railways, at the same time passing resolutions thanking the railways for courtesies heretofore received. The chairman of the new transportation committee is W. G. Brimson, who is vice-president and general manager of the Quincy, Omaha & Kansas City.

The Illinois Central, the New Orleans & Northeastern, the Mobile & Ohio and the Louisville & Nashville have announced reductions in the rate on sugar from New Orleans to points in the Central Freight Association territory. All points in Ohio and Indiana, except those on the Ohio river, are included, and in addition Detroit. The new rates are announced to go into effect November 27. The new tariff is designed to increase sugar shipments from New Orleans, and meets the rates from New York. The present all-rail rate from New York to points

in Ohio is 20 cents, and the lake and rail rate is 18 cents. The new rate announced by the New Orleans lines is said to be 23 cents, which is low, considering the difference in mileage. A demand will naturally follow for lower rates on other commodities from New Orleans, such as coffee. The beet sugar men in Michigan will naturally expect lower rates, if New Orleans gets a better rate to Detroit.

A "Farmers' Special" steamboat was run this week by the Maryland, Delaware & Virginia Railway Co., for the benefit of farmers along the Potomac river, who ship (or who ought to ship) produce over the railway company's boat and rail lines. A two-day trip of this kind was made a short time ago on the Rappahannock river. On the present trip the commissioner of agriculture of the state of Virginia delivered lectures; also Professor Johnson, of the state truck experiment station.

The passenger agents of Havana, who expect to entertain the American Association of General Passenger and Ticket Agents next March, when that body holds its annual meeting in that city, have already formed an association to make arrangements for the entertainment. The president of the association is Robert M. Orr. The secretary is E. M. Sanchez and there are seven vice-presidents, D. A. Galdos, W. M. Daniel, E. H. Pearson, Harry Usher, Frank Steinhart, G. Lawton Childs and Ward G. Foster.

John S. Dawson, attorney of the Kansas Railway Commission, has given Governor Stubbs, of that state, an opinion that there is no way for either the state or the federal government to compel the Chicago, Rock Island & Pacific to handle freight and passenger business at Lawrence. The Rock Island uses the tracks of the Union Pacific between Kansas City and Topeka under a contract which provides that it shall do no local business between these points. Mr. Dawson says that since the Rock Island has no railway passing through Lawrence it owes no duty to the public there.

New, Interchangeable Mileage Book.

The roads west of Chicago have agreed on a new interchangeable mileage ticket book, which will be put into use January 1 as a substitute for all forms of mileage tickets now in use. It will be issued by the individual roads, but will be of uniform type and adapted for use in states where varying rates of legal maximum fares are now in force. The roads adopted the report of the committee of the Western Passenger Association and the Southwestern Passenger Mileage Bureau, which recommended a non-transferable personal descriptive book containing 2,000 coupons to be sold for \$40. Instead of representing miles, however, each coupon will virtually represent 2 cents, and will thus be available for use with varying rates of fare.

The Cotton Crop.

Although as a whole the cotton crop of the country this year is disappointing in volume, the yield in Georgia and some other southeastern states is good, and the *Wall Street Journal* estimates that Georgia alone will receive 130 millions for its cotton. Prices will be so high that the whole South will have a supply of money more plentiful than for years.

"The crop is being marketed with less regard for the middleman, and more directly between producer and consumer than ever before. Accepting the estimate of 11,250,000 bales, total crop, and taking prices thus far in the season (an average of \$65 a bale), gross returns to the grower will be \$162,500,000 for the first 2,500,000 bales. It is fair to assume, however, that the balance of the crop may average \$70 a bale, or 14 cents a pound. If so, the gross income of the total estimated yield would be as follows, not including by products:

Bales.	Av. Price.	Total Value.
2,500,000	\$65	\$162,500,000
8,750,000	70	612,500,000
11,250,000 .....	..	\$775,000,000

"This does not include the value of cotton seed and linters, for which at least another \$100,000,000 will have to be added. That would make \$875,000,000 for this year, compared with \$681,231,000 in 1908, or \$700,956,000 in 1907.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF AUGUST, 1909.

(See also issues of October 8, 15, and 22.)

Name of road.	Mileage operated at end of period.	Operating revenues			Maintenance			Trans- portation.	Traffic.	Operating expenses		Net operating revenues (or deficit).	Outside operations. net.	Operating (or loss).	Increase comp. with last year.
		Freight.	Passenger.	Total.	Way and structures.	Equip- ment.	Of traffic.			General.	Taxes.				
Atlantic City	166	\$62,796	\$230,177	\$303,621	\$20,278	\$14,610	\$5,464	\$107,955	\$5,464	\$1,014	\$7,000	\$154,181	-\$3,888	\$143,293	\$23,912
Belt Ry. Co. of Chicago	21	87,331	17,606	104,937	11,253	12,280	57	63,811	57	6,493	5,000	83,436	.....	83,436	14,407
Baltimore & Annapolis	46	70,884	30,991	101,875	13,258	12,386	47	33,117	47	1,682	2,000	33,815	.....	33,815	7,152
Charleston & Western Carolina	340	97,550	194,921	292,471	28,717	13,336	3,706	33,117	3,706	3,706	4,475	33,117	.....	33,117	7,662
Chicago, Cincinnati & Louisville	284	520,880	194,921	715,801	119,043	106,711	9,083	280,355	9,083	31,335	3,403	116,698	.....	116,698	24,086
Chicago, Great Western	518	3,628,197	1,493,762	5,121,959	937,196	695,508	117,392	2,083,540	117,392	88,979	17,910	170,638	.....	170,638	24,881
Cleveland, Milwaukee & St. Paul	751	144,917	59,742	204,659	37,180	52,777	2,607	69,462	2,607	3,257	2,000	100,701	.....	100,701	24,881
Cleveland, Akron & Columbus	210	66,691	33,333	100,024	18,206	12,571	3,053	33,455	3,053	3,257	2,000	100,701	.....	100,701	24,881
Detroit & Mackinac	347	136,745	30,120	166,865	18,206	12,571	3,053	33,455	3,053	3,257	2,000	100,701	.....	100,701	24,881
Duluth & Iron Range	168	136,745	30,120	166,865	18,206	12,571	3,053	33,455	3,053	3,257	2,000	100,701	.....	100,701	24,881
Duluth, Missabe & Northern	289	187,347	37,370	224,717	113,843	109,281	6,818	203,370	6,818	10,520	5,688	995,496	.....	995,496	35,470
Duluth, South Shore & Atlantic	594	1,877,347	98,008	1,975,355	56,244	27,550	6,818	100,920	6,818	10,520	5,688	995,496	.....	995,496	35,470
Evansville & Terre Haute	191	154,399	60,101	214,500	22,865	27,550	6,818	39,334	6,818	7,923	7,768	1,414,333	.....	1,414,333	297,466
Houston, East & West Texas	101	68,278	30,060	98,338	12,435	14,785	1,460	38,235	1,460	3,252	8,872	99,715	.....	99,715	28,252
Indianapolis & Fort Wayne	102	107,968	5,524	113,492	17,498	15,112	1,931	38,235	1,931	3,252	8,872	99,715	.....	99,715	28,252
Lehigh & Hudson River	96	81,271	16,287	97,558	12,435	14,785	1,460	38,235	1,460	3,252	8,872	99,715	.....	99,715	28,252
Louisiana & Arkansas	226	81,271	16,287	97,558	12,435	14,785	1,460	38,235	1,460	3,252	8,872	99,715	.....	99,715	28,252
Louisiana Ry. & Nav. Co.	350	102,042	49,008	151,050	17,232	13,512	1,561	25,723	1,561	4,990	3,600	27,374	.....	27,374	11,771
Louisiana Western	198	120,809	48,242	169,051	17,232	13,512	1,561	25,723	1,561	4,990	3,600	27,374	.....	27,374	11,771
Mason City & Fort Dodge	386	588,473	123,166	711,639	90,084	140,843	26,072	272,318	26,072	30,513	7,193	297,690	.....	297,690	10,368
Mobile & Ohio	1,114	63,959	30,910	94,869	22,264	14,078	1,910	37,734	1,910	4,255	7,000	56,235	.....	56,235	10,368
Mobile, Jackson & Kansas City	403	63,959	30,910	94,869	22,264	14,078	1,910	37,734	1,910	4,255	7,000	56,235	.....	56,235	10,368
Mobile, Jackson & Kansas City	275*	118,285	60,038	178,323	22,264	14,078	1,910	37,734	1,910	4,255	7,000	56,235	.....	56,235	10,368
New York, Susquehanna & Western	151	80,921	53,335	134,256	32,268	29,280	2,091	53,638	2,091	4,494	3,800	67,432	.....	67,432	23,456
Pecos & Northern Texas	182	80,921	53,335	134,256	32,268	29,280	2,091	53,638	2,091	4,494	3,800	67,432	.....	67,432	23,456
Richmond, Fredericksburg & Potomac	456	61,559	25,950	87,509	22,264	14,078	1,910	37,734	1,910	4,255	7,000	56,235	.....	56,235	10,368
St. Louis, Merchants' Bridge Terminal	9	76,706	25,950	102,656	22,264	14,078	1,910	37,734	1,910	4,255	7,000	56,235	.....	56,235	10,368
St. Louis, Merchants' Bridge Terminal	257	104,036	21,963	125,999	22,264	14,078	1,910	37,734	1,910	4,255	7,000	56,235	.....	56,235	10,368
Santa Fe, Prescott & Phoenix	125	104,036	21,963	125,999	22,264	14,078	1,910	37,734	1,910	4,255	7,000	56,235	.....	56,235	10,368
Southern Ry. of Texas	168*	38,398	58,633	97,031	11,962	16,013	2,811	28,448	2,811	3,592	1,551	46,970	.....	46,970	30,418
Spokane & Inland Empire	296	100,361	17,645	118,006	16,013	16,013	2,811	28,448	2,811	3,592	1,551	46,970	.....	46,970	30,418
Trinity & Brazos Valley	455*	100,361	17,645	118,006	16,013	16,013	2,811	28,448	2,811	3,592	1,551	46,970	.....	46,970	30,418
Union & Delaware	129	61,553	70,527	132,080	14,322	10,610	1,536	46,802	1,536	3,210	3,000	59,455	.....	59,455	6,410
Union (Pittsburgh)	31	440,729	100,639	541,368	77,340	73,239	10,968	161,389	10,968	12,179	17,500	224,983	.....	224,983	110,176
Western Maryland	543	129,575	\$420,713	\$569,802	\$39,532	\$32,244	\$7,906	\$215,501	\$7,906	\$1,381	\$14,000	\$273,238	-\$6,650	\$252,588	\$53,740

TWO MONTHS OF FISCAL YEAR 1910.

Atlantic City	166	\$129,575	\$420,713	\$569,802	\$39,532	\$32,244	\$7,906	\$215,501	\$1,381	\$296,564	\$273,238	-\$6,650	\$14,000	\$252,588	\$53,740
Belt Ry. Co. of Chicago	21	170,609	28,578	370,995	23,156	45,402	1,153	124,885	12,093	206,399	164,398	.....	10,000	154,395	29,403
Burlington & Pacific	46	120,812	57,337	209,187	24,769	38,268	862	76,765	3,408	144,072	65,968	.....	4,000	61,908	14,758
Charleston & Western Carolina	340	177,286	57,337	234,623	54,462	28,122	5,296	74,806	7,166	270,082	86,780	.....	8,950	26,546	3,780
Chicago, Cincinnati & Louisville	284	520,880	194,921	715,801	119,043	106,711	9,083	280,355	11,259	723,358	36,186	.....	6,810	29,970	50,023
Chicago, Great Western	518	3,628,197	1,493,762	5,121,959	937,196	695,508	117,392	2,083,540	184,676	1,713,937	258,482	.....	38,140	245,298	48,618
Cleveland, Milwaukee & St. Paul	751	144,917	59,742	204,659	37,180	52,777	2,607	69,462	8,127	1,123,939	3,323,952	67,162	413,233	2,983,691	522,448
Cleveland, Akron & Columbus	210	66,691	33,333	100,024	18,206	12,571	3,053	33,455	18,639	3,879,612	3,323,952	.....	10,000	94,214	522,448
Detroit & Mackinac	347	136,745	30,120	166,865	18,206	12,571	3,053	33,455	8,127	1,291,531	67,366	.....	14,098	56,314	27,181
Duluth & Iron Range	168	136,745	30,120	166,865	18,206	12,571	3,053	33,455	17,685	3,065,799	2,065,799	2,952	109,845	1,969,950	611,496
Duluth, Missabe & Northern	289	187,347	37,370	224,717	113,843	109,281	6,818	203,370	20,532	1,874,588	3,058,393	15,595	161,468	2,912,522	700,756
Duluth, South Shore & Atlantic	594	1,877,347	98,008	1,975,355	56,244	27,550	6,818	100,920	16,354	971,938	5,058,393	15,595	32,000	163,894	65,490
Evansville & Terre Haute	314	275,667	133,935	409,602	41,937	38,774	16,774	106,491	14,253	233,202	191,634	1,809	17,741	171,913	29,940
Houston, East & West Texas	191	130,030	59,678	199,708	20,850	27,550	3,011	69,251	14,253	233,202	191,634	1,809	17,741	171,913	29,940
Indianapolis & Fort Wayne	102	68,278	30,060	98,338	12,435	14,785	1,460	38,235	6,618	118,254	82,729	.....	9,616	73,113	4,928
Lehigh & Hudson River	96	81,271	16,287	97,558	12,435	14,785	1,460	38,235	9,888	145,740	65,467	.....	6,400	34,971	22,111
Louisiana & Arkansas	226	168,982	30,218	199,200	36,237	37,976	3,234	137,906	5,843	248,201	72,293	.....	5,500	66,793	49,873
Louisiana Ry. & Nav. Co.	350	102,042	49,008	151,050	17,232	13,512	1,561	25,723	8,914	137,003	69,146	.....	7,200	65,576	23,977
Louisiana Western	198	120,809	48,242	169,051	17,232	13,512	1,561	25,723	10,432	166,505	38,833	.....	3,200	61,833	46,918
Mason City & Fort Dodge	386	588,473	123,166	711,639	90,084	140,843	26,072	272,318	18,751	205,927	118,751	389	14,855	109,140	19,076
Mobile & Ohio	1,114	63,959	30,910	94,869	22,264	14,078	1,910	37,734	1,432	205,927	138,137	1,333	10,000	133,137	23,413
Mobile, Jackson & Kansas City	403	63,959	30,910	94,869	22,264	14,078	1,910	37,734	62,038	110,559	494,883	5,607	6,763	47,726	41,181
Mobile, Jackson & Kansas City	275*	118,285	60,038	178,323	22,264	14,078	1,910	37,734	17,213	158,899	77,489	.....	1,400	47,726	26,911
New Orleans Great Northern	151	80,921	53,335	134,256	32,268	29,280	2,091	53,638	17,213	260,400	142,679	.....	2,395	117,287	51,569
New York, Susquehanna & Western	182	80,921	53,335	134,256	32,268	29,280	2,091	53,638	6,572	260,400	103,507	.....	400	101,112	19,883
Pecos & Northern Texas	152	196,184	52,417	248,601	33,594	34,472	3,091	76,544	9,578	227,631	110,002	.....	400	109,602	22,917
Richmond, Fredericksburg & Potomac	456	61,559	25,950	87,509	22,264	14,078	1,910	37,734	11,745	169,829	36,904	.....	7,200	29,704	4,494
St. Louis, Merchants' Bridge Terminal	9	76,706	25,950	102,656	22,264	14,078	1,910	37,734	10,135	158,986	87,455	.....	8,600	78,855	19,196
St. Louis, Merchants' Bridge Terminal	257	104,036	21,963	125,999	22,264	14,078	1,910	37,734	10,111	127,175	100,162	.....	.....	86,940	58,936
Santa Fe, Prescott & Phoenix	125	104,036	21,963	125,999	22,264	14,078	1,910	37,734	10,111	127,175	100,162	.....	.....	86,940	58,936
Southern Ry. of Texas	168*	38,398	58,633	97,031	11,962	16,013	2,811	28,448	6,963	168,070	90,042	.....	3,102	100,162	58,936
Spokane & Inland Empire	296	100,361	17,645	118,006	16,013	16,013	2,811	28,448	12,701	112,074	205,834	42,423	5,400	242,857	162,396
Terminal Ry. Assn. of St. Louis	26	71,267	282,012	353,279	29,226	29,226	996	122,959	14,890	264,935	168,598	27,142	42,000	153,740	4,753
Trinity & Brazos Valley	455*	191,478	34,332	225,810	60,111	10,012	3,897	124,888	19,392	276,369	43,589	.....	7,000	50,589	6,838
Trinity & Delaware	129	191,478	34,332	225,810	60,111	10,012	3,897	124,888	4,770	151,032	135,397	.....	6,400	129,027	23,084
Union (Pittsburgh)	31	856,488	214,253	1,070,741	148,048	94,054	230	197,806	4,231	339,415	484,969	4,019	1,000	487,988	222,791
Western Maryland	543	856,488	214,253	1,070,741	148,048	94,054	230	197,806	24,632	658,834	463,821	.....	35,000	428,821	34,039

Car Surpluses and Shortages.

Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, in presenting statistical bulletin No. 57, giving a summary of car shortages and surpluses by groups from May 27, 1908, to October 13, 1909, says:

"This report shows a shortage of 23,431 cars, the largest which we have experienced for nearly two years. There is, however, still a surplus of 35,977 cars. The shortages are in the East and South, while the surpluses are chiefly in the West and Northwest. There seems to be no doubt that the railways are carrying as much freight as they did in October, 1907, and it is to be noted that the shortages are less than one-third of what they were then, when there was no surplus at all as compared with the present surplus of 35,977. It is also to be noted that the shortage is only 10,232 cars more than it was a year ago, and the surplus has dropped only 17,411 cars in the last two weeks. The drop in surplus is almost exactly what it was a year ago, and it is probable that we have reached, or nearly reached, our maximum shortage, although it is also probable the surplus will be somewhat further reduced. If there is any serious shortage this fall, it will probably be on the coal roads.

"The statement shows that the railways have done even more than they were called on to supply the average demands of trade and are going far to meet the extraordinary demand of the current month."

The accompanying table gives the surpluses and shortages

was believed that the marshaling of facts especially pertinent to this phase of the subject would conclusively disclose that the dollar now received by the carriers for their services has depreciated in its purchasing value by reason of the greatly increased costs in all branches of their operation. You may ascertain that statement was made that the pamphlet did not indicate a policy which would be followed by the carriers with which I am associated. The undertaking was a personal one, and should not be construed as denoting the policy of the carriers with respect to higher charges. I may add that I have no knowledge of any plan looking to an immediate general advance in freight rates of carriers in Official Classification territory.

"It is true that the net income of all the railways of the United States for 1907 increased 453 per cent. when compared with the net income for 1897; also that such stock as paid dividends, the average rate of dividend paid increased from 5.43 per cent. to 6.23 per cent. It may also be stated that the owners of shares of railway stock received \$220,978,028 greater dividends in 1907 than in 1897. It should not be overlooked when considering these results that 32.73 per cent. of the capital stock and 3.76 per cent. of funded debt received no interest or dividend for 1907. The amount available for dividends, i.e., \$308,088,627, is equivalent to 4.19 per cent. of the entire capital stock which, it is suggested, should be kept in mind when determining whether the results for the year 1907 are wholly satisfactory to investors.

"I suggest that industrial conditions generally would be regarded as highly satisfactory were the carriers in position to

CAR SURPLUSES AND SHORTAGES, MAY 27, 1908, TO OCTOBER 13, 1909, INCLUSIVE.

	Number of roads.	Surpluses.				Shortages.				Total.
		Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Box.	Flat.	Coal, gondola and hopper.	Other kinds.	
October 13, 1909.....	175	14,991	3,735	5,530	11,721	14,693	1,367	5,100	2,271	23,431
September 29, 1909.....	174	22,330	3,821	11,239	15,998	8,184	655	4,392	1,351	14,582
August 18, 1909.....	169	82,505	5,953	42,158	28,808	556	277	1,076	100	2,009
July 21, 1909.....	165	116,221	9,971	78,675	38,487	106	169	31	33	339
June 23, 1909.....	166	121,441	12,099	89,292	40,112	211	190	193	233	827
May 26, 1909.....	158	118,077	14,940	97,006	43,687	83	99	1,011	47	1,240
April 28, 1909.....	161	107,665	16,487	110,538	47,638	144	106	74	173	497
March 31, 1909.....	158	101,344	20,428	128,546	46,282	158	98	116	27	399
February 17, 1909.....	159	98,512	23,924	135,208	43,797	266	97	11	96	470
January 20, 1909.....	162	127,204	26,723	116,680	41,057	163	21	139	35	358
December 23, 1908.....	158	87,350	16,247	79,595	38,885	471	42	289	217	1,019
November 25, 1908.....	160	45,194	12,157	43,854	31,624	7,923	178	900	209	9,210
October 28, 1908.....	158	39,383	10,185	31,541	29,803	8,175	167	2,261	236	10,839
September 30, 1908.....	160	42,593	10,365	49,795	31,039	7,313	450	224	127	8,114
August 19, 1908.....	160	106,367	13,494	92,500	40,642	465	90	105	194	854
July 22, 1908.....	166	120,580	14,401	125,739	47,960	115	37	330	27	509
June 24, 1908.....	163	123,112	18,042	130,149	41,995	266	34	120	31	451
May 27, 1908.....	160	144,697	20,075	162,695	54,437	82	13	12	18	125

for the period covered by the report and the diagram (on page 803 of this issue) shows surpluses and shortages in 1907, 1908 and 1909.

Shippers' Conference at Cincinnati.

A meeting of representatives of various shippers associations in the Central West was held at Cincinnati, Ohio, on October 22. Its purpose was to consider the pamphlet recently issued by C. C. McCain entitled "The Diminished Purchasing Power of Railway Earnings." Resolutions were adopted citing the increase in net earnings from operation in the years from 1897 to 1907 as evidence that the railways are prosperous in spite of increases in costs of labor and materials. A joint letter was also addressed by the conference to W. C. Brown, president of the New York Central Lines; Oscar G. Murray, president of the Baltimore & Ohio, and James McCrea, president of the Pennsylvania System. The figures in the resolutions adopted at the meeting on October 22 and in the letter to Messrs. Brown, Murray and McCrea were substantially the same as those in the statement issued at the previous meeting of the shippers, which was referred to by the *Railroad Age Gazette* in its issue of October 15, page 721. Mr. McCain has issued a reply to the statements of the shippers in which he says:

"Your communication addressed to Presidents McCrea, Brown and Murray, relative to the pamphlet recently published by myself, entitled, 'The Diminished Purchasing Power of Railway Earnings,' has been referred to me for attention. It

return to all stockholders a satisfactory dividend. I think it will be admitted that 6 per cent. would not be regarded as excessive for this purpose. If this had been possible on the present capital investment the carriers would have been required to have had available for stock dividends for 1907 \$441,411,701. This would have exceeded the amount that was actually available for this purpose by \$133,323,074, and which, being necessarily a part of their net income, would have increased the same for 1907 as compared with the net income of 1897, upward of \$500,000,000, or approximately 600 per cent.

"While the average rate paid on dividend-paying stock in 1907 was 6.23 per cent., it should not be overlooked that only 36.78 per cent. of the total capital stock received 6 per cent. or higher, 14.88 per cent. of the total capital stock received from 5 to 6 per cent. dividend and 15.60 per cent. received from 1 to 5 per cent. dividend, while 32.73 per cent. received no dividend. Similarly, it is noticed that 3.76 per cent. of funded indebtedness returned no interest, 18.93 per cent. not over 4 per cent. interest, 54.40 per cent. from 4 to 5 per cent. and 22.91 returned 5 per cent. or over.

"I cannot but feel that your comparative data which especially directs attention to increases is not an entirely fair premise. I do not assume that you regard the return to railway investors in 1897 as sufficient, when 70.10 per cent. of outstanding stock paid no dividends and 16.59 per cent. of outstanding bonds paid no interest, or that you would claim under the foregoing showing that they were wholly adequate in 1907.

"Consistent with the argument contained in the pamphlet, I may add that in my personal judgment the carriers are

entitled to a more equitable adjustment of freight charges than exists at present. The decreased purchasing power of their earnings, the higher cost for capital, increasing taxes, the increasing public demand for facilities and additional regulatory burdens suggest the various demands for expenditures which must precede returns to investors. If the latter shall reach an equality with agriculture, manufacturing and other industries, and be maintained for the entire capital invested, and provision also made for future requirements, such as new construction and equipment, increased facilities, etc., it must be evident that the present earnings, which return 6.23 per cent. as dividend on 70 per cent. of the capital stock and no dividend on 30 per cent., are inadequate.

"Economy of operation is nowhere more intelligently directed than in the transportation business, but it would appear at times that the public claims the right to confiscate all such economies through rate reductions, burdensome legislation, etc., to the exclusion and indifference of a reasonable return on the capital invested. If the railways are to receive no profit from increased service and improved methods and facilities, may it not be said that the men capable of bringing about these improved public conditions would better direct their efforts to other channels?"

Reduction of Fares on Southern Pacific in Arizona.

The Arizona railway commission does not sit up nights nursing its dignity; on the contrary, its modesty seems excessive. Instead of issuing orders to the railways it petitions them. The petitions are published, so that if a railway should unjustly snub the commission it would have to answer at the bar of public opinion. The commission recently submitted a petition to the railways of the territory for a reduction of rates. It was promptly advised by the Southern Pacific that about December 1 the passenger rate between Benson and Nogales would be reduced from 5 to 4 cents a mile. Also a reduction of freight rates from the east by way of Clifton will go into effect January 1 of 29 3/4 per cent. on all classes of freight between El Paso and Clifton.

STATE COMMISSIONS.

The railway commission of Wisconsin has ordered joint rates on grain from certain stations on the lines of the Chicago, Burlington & Quincy to Milwaukee, Wis., as on hearing and investigation it was disclosed that such rates were warranted by the conditions.

The Indiana Railroad Commission, in order to lessen the hazard of line wires to railway employees, has asked steam and electric roads to furnish the commission with a list of all telegraph and telephone wires crossing their tracks, with details; this with a view to ordering all dangerous wires properly secured against the possibility of their coming in contact with, or being crossed by, line wires or high-tension trolley wires.

According to a press despatch from Olympia, the railway commission of the state of Washington has summarily denied a petition of the Great Northern, apparently without giving reasons, because the road has deliberately ignored certain orders of the commission. These orders required the company to build 13 new stations, to remodel six others and to lay many side tracks; and if they are not soon complied with the commission proposes to enforce the heavy penalties provided by law for failure to comply with such orders.

The New York State Public Service Commission, First district, has refused to allow the Long Island Railroad to leave unattended at night a highway crossing where there are gates, which are opened and closed by an attendant during the daytime. The opinion is by Commissioner Bassett. He says that the crossing in question is on a side hill, with lines of sight badly obstructed. A pedestrian or person driving a vehicle, coming along at night and not being stopped by the gates or by a flagman, would be liable to conclude that the crossing was clear whether it were so or not.

COURT NEWS.

The Delaware, Lackawanna & Western has again been indicted for non-compliance with the New York state law requiring employees to be paid semi-monthly, this time in Oswego.

The hearing of the petition of a number of railways in Oklahoma for an injunction to restrain the Oklahoma Corporation Commission from enforcing the provision of the state constitution fixing passenger fares at 2 cents a mile, has been set by the United States circuit court at Guthrie for November 9. The roads also attack freight rates that have been fixed by the Corporation Commission.

The United States circuit court at Hot Springs, Ark., has sustained a demurrer by the defendants in a case brought by the state against the Rock Island and the Hot Springs Western for having entered into an agreement regarding rates between Little Rock and Hot Springs in alleged violation of the state anti-trust law. The state sought to recover penalties aggregating more than \$1,000,000. The court held that the state had repealed its anti-trust law as it applies to railways when it created a railway commission and gave it authority to control rates.

Judge Austill, in the superior court at Anderson, Ind., has decided that the Interstate Commerce law does not invalidate a contract made prior to its passage with William Boland by the Cleveland, Cincinnati, Chicago & St. Louis for a life-time pass over the road as part of a valuable consideration. After the passage of the amendment of 1906 the railway company refused to honor the pass, alleging that the law nullified the contract. The pass was given in consideration of a right-of-way across Boland's farm, and the court holds that the law against passes does not release the company from liability for the equivalent or value of the pass in question.

Judge James E. Withrow, of the state circuit court at St. Louis, Mo., on October 19 rendered a decision holding that the Illinois Traction System cannot condemn a right-of-way into St. Louis over the tracks of the Wabash near Second and Hall streets. The traction company is building a bridge over the Mississippi river, which is nearly finished, and expected to extend its lines from the bridge to its St. Louis terminus over the tracks of the Wabash. The case will be appealed to the state supreme court. The suit was brought in the name of the bridge company. The court said that the bridge company asserts the right to have commissioners appointed not only to assess the damages but to determine the point and manner of crossing the Wabash's tracks. If a bridge company could build a bridge wherever it might desire, said the court, then it could designate the point and determine the manner of crossing with or without the approval of the railway or the public. Being satisfied that a bridge corporation has no such right the court sustained the demurrer of the Wabash to its petition.

The 28-Hour Law as Affecting Sheep.

The law of June 29, 1906, provides for the unloading of cattle, etc., for food, water and rest at the expiration of 28 consecutive hours' transportation, except that the time may be extended to 36 hours by the written request of the shipper. The law provides, however, that sheep need not be unloaded in the night time, but that where the time expires in the night sheep may be continued in transit to a suitable place for unloading, subject to the 36-hour limitation. The United States circuit court of appeals for the Ninth circuit holds, in the case of Southern Pacific vs. the United States, that the provision was not fatally defective for uncertainty, the meaning being that in case of sheep, if the 28-hour limit expires at night, the transit may be continued to a suitable place for unloading without the consent of the owner or custodian, except that in no case shall the 36-hour limit be exceeded. The court holds that the shipment and not the carload shall be the unit in case of violation of the act.

Railroad Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

Robert S. Lovett has been elected president of the Union Pacific, also president of the Oregon Short Line, succeeding E. H. Harriman, deceased. See account of his life in another column of this issue.

F. C. MacArthur has been appointed car accountant, secretary and treasurer of the Dairy Shippers' Despatch and the dairy department of the Lackawanna Line, with office at Chicago, succeeding R. G. Root, deceased.

Edward P. Higgins, auditor of disbursements of the Cleveland, Cincinnati, Chicago & St. Louis, has been promoted to assistant auditor, with office at Cincinnati, Ohio. G. N. Wellman succeeds Mr. Higgins, with office at Cincinnati.

William Mahl's new title of vice-president, as well as comptroller of the Union Pacific and Southern Pacific systems, indicates a promotion, and yet to those who know the work, and perhaps to himself, it seems to remove him from a class where he was pre-eminent and there is a slight feeling of regret at the change. For many years no one would have hesitated in naming him as the first comptroller in the land, whether considered as a pioneer or as a present day officer in the design and preparation of railway statistics for profitable use as operating lessons, or as a clear statement of assets and liabilities. We re-discover a great many things. It was 44 years ago that in the annual reports of two of the constituent companies of the Louisville & Nashville the following credit was given by the president: "Through Mr. Mahl's assistance we have thoroughly systematized our accounts and have distributed under the head of freight and passengers all expense accounts. We are thus enabled to arrive at the cost of carrying per mile a passenger and a ton of freight. * * * They will become valuable in arranging your tariff of freight and passengers and in determining the relative economy of operation of these and other roads."

Mr. Mahl has in his entire railway service of nearly 50 years been singularly fortunate in serving under great men: Albert Fink, Thomas A. Scott, Collis P. Huntington and E. H. Harriman. Inspiration comes from the top. He never served under a small man; indeed, the list of his superior officers begins, and nearly completes, the roll call of the greatest railway men this country has produced.

Inspiration from the top is a great factor in the success of any man, but it is far from being enough. Mr. Mahl had in addition to this the ability and the essential qualities of industry and integrity; but, after all, his great value as an accountant, a statistician and organizer, comes primarily from his early thorough and really broad experiences. He began as a shop apprentice, became a journeyman, a draftsman, a chief clerk, a purchasing agent, an auditor, a financial agent, a general superintendent. There is a great deal of difference in the meaning and use of figures by a professorial statistician of the Interstate Commerce Commission and by one to whom all these figures are graphic representing concrete facts in operation and items of equipment of which he has full knowledge. Figures representing sums of money

have quite different meanings to one whose business it is to receive and disburse huge sums, and to another whose study of them is purely academic.

Mr. Mahl was born in Carlsruhe, Baden, December 19, 1843, and came to America with his parents in 1852. In 1860 he was entered as an apprentice in the shops of the Louisville & Nashville. In four years he became successively a machinist, a draftsman and chief clerk in the mechanical department. From 1864 to 1872 he was auditor and purchasing agent of the Louisville, Cincinnati & Lexington. For a few years he served under Colonel Scott as auditor, purchasing agent and financial agent of the Texas & Pacific. Soon after the panic of 1873 he returned to the Louisville, Cincinnati & Lexington, becoming its general superintendent. In February, 1882, Mr. Huntington called him to New York, where he served successively as general agent, comptroller and assistant to the president of the Chesapeake & Ohio and the Southern Pacific and the various collateral railways, steamship lines and other large interests of Mr. Huntington. After Mr. Huntington's death Mr. Harriman continued and extended Mr. Mahl's functions so as to cover the entire Union Pacific and Southern Pacific systems.

T. J. Elton, assistant secretary of the Manistee & Northwestern, has been elected secretary, with office at Manistee, Mich., succeeding William Douglas, resigned.

Operating Officers.

Grant Geddes, assistant superintendent of the Sumpter Valley at Baker City, Ore., has been appointed general superintendent, with office at Baker City.

F. L. Butler has been appointed general manager of the Denver & Intermountain, with office at Denver, Colo. F. N. Dawson has been appointed a trainmaster.

W. L. Connelly, superintendent of telegraph of the Chicago, Indiana & Southern at Gibson, Ind., has been appointed trainmaster of the Danville division, with office at Danville, Ill.

W. E. Miller has been appointed superintendent of the first division of the Denver & Rio Grande, with office at Pueblo, Colo., succeeding F. R. Rockwell, granted a leave of absence.

W. S. Logan has been appointed manager of the Dairy Shippers' Despatch and of the dairy department of the Lackawanna Line, with office at Chicago, succeeding R. G. Root, deceased.

F. M. Barker, general yardmaster of the Lehigh Valley at Sayre, Pa., has been appointed inspector of transportation, with office at South Bethlehem, Pa., succeeding J. N. Haines, transferred.

George W. Hulsizer, formerly with the Southern Railway at Washington, D. C., has been appointed signal engineer of the Chicago & Alton, with office at Bloomington, Ill., succeeding George W. Daves, resigned to engage in other business.

Thomas Brennan, assistant superintendent of the Chicago, Indiana & Southern at Danville, Ill., has had his jurisdiction extended over the Indiana Harbor Belt Railroad, and will assume also the duties of superintendent of telegraph, with office at Gibson, Ind.

W. R. Hastings, superintendent of signal construction on the Chicago, Rock Island & Pacific, has been appointed general signal inspector, and the office of interlocking engineer has been abolished. B. H. Richards, lamp inspector, succeeds Mr. Hastings, and J. H. Benedict succeeds Mr. Richards, all with offices at Chicago.

Traffic Officers.

Paul S. Weaver, traveling passenger agent of the Rock Island-Frisco lines at Nashville, Tenn., has been transferred to Cincinnati, Ohio.

A. E. Melbin has been appointed a contracting freight agent of the Great Northern, with office at Spokane, Wash., succeeding E. H. Gibbon, resigned.

H. S. Stebbins, division freight agent of the Erie at Rochester, N. Y., has resigned to become traffic manager of the



William Mahl.

General Motors Co., with office at New York, effective November 1.

F. R. Lacey, commercial agent of the Indiana Harbor Belt Railroad at Gibson, Ind., has been appointed an assistant general freight agent, with office at Gibson.

Robert J. John, soliciting freight agent of the Rock Island-Frisco lines at Houston, Tex., has been appointed a soliciting freight agent of the Gulf, Colorado & Santa Fe, with office at Houston, Tex., succeeding D. W. Head, promoted.

H. M. Mounts, district passenger agent of the Lake Erie & Western at Lima, Ohio, has been appointed general agent of the passenger department, with office at Indianapolis, Ind., succeeding R. C. Kennedy, transferred to Louisville, Ky.

T. W. Proctor, assistant general agent of the Chicago, Milwaukee & St. Paul at Chicago, has been appointed a commercial agent, freight department, with office at Chicago, succeeding G. B. French, who has become president of the Spokane, Portland & Seattle.

W. C. Lewis, assistant general freight agent of the Michigan Central at Bay City, Mich., has been appointed assistant general freight agent, with office at Chicago, succeeding F. Zimmerman, resigned to accept service elsewhere. J. H. Brown succeeds Mr. Lewis.

C. C. McCord has been appointed a division freight agent of the Erie, with office at Rochester, N. Y., succeeding H. S. Stebbins, resigned. L. B. Smith has been appointed a traveling passenger agent, with office at Kansas City, Mo., succeeding L. F. McFarland, resigned.

Charles N. Singer has been appointed traveling dairy agent of the Dairy Shippers' Despatch and of the dairy department of the Lackawanna Line agency, with office at Chicago. Peter J. Gaynor has been appointed dairy agent, with office in New York, N. Y., succeeding J. B. Briggs, resigned to accept service elsewhere.

I. P. Blanton, commercial agent of the Atlanta, Birmingham & Atlantic at Nashville, Tenn., has been appointed general western agent of the Carolina, Clinchfield & Ohio, with office at Cincinnati, Ohio. R. D. T. Hollowell, traveling freight agent of the Atlanta, Birmingham & Atlantic at Cincinnati, has been appointed a commercial agent of the Carolina, Clinchfield & Ohio, with office at Pittsburgh, Pa. Spencer Eakin has been appointed a commercial agent, with office at Louisville, Ky.

R. S. Morris has been appointed a commercial agent of the Talladega territory of the Atlanta, Birmingham & Atlantic, with office at Talladega, Ala., succeeding M. J. Mead, promoted. J. F. Phillips has been appointed a soliciting freight agent, with office at Jacksonville, Fla., succeeding J. A. Sabiston, resigned to go to another company. George Land, Jr., has been appointed a commercial agent of the Atlanta territory, with office at Atlanta, Ga., succeeding Theodore Dehon, Jr., resigned to go to another company.

M. S. Flanagan, soliciting freight agent of the Atlanta, Birmingham & Atlantic at Nashville, Tenn., has been appointed a commercial agent, with office at Nashville, succeeding I. P. Blanton, resigned. George J. Allen, commercial agent of the Macon & Birmingham at Nashville, succeeds Mr. Flanagan. Charles Patton, traveling passenger agent at Atlanta, Ga., has been appointed a traveling freight agent, with office at Cincinnati, Ohio, succeeding R. D. T. Hollowell, resigned to go to another company. H. C. Hunt, passenger agent at Birmingham, Ala., succeeds Mr. Patton, with office at Atlanta, Ga., and A. D. Daniel succeeds Mr. Hunt, with office at Birmingham.

R. Creelman, whose appointment as assistant general passenger agent of the Canadian Northern, with office at Winnipeg, Man., has been announced in these columns, was born December 18, 1875, at Durham, Ont. He received a college education and began railway work in 1891 as messenger to the city freight agent of the Grand Trunk at Toronto, Can. Two years later he became ticket agent and then became chief clerk to the district passenger agent. In 1900 he entered the office of the general passenger agent of the Canadian Pacific

at Winnipeg, Man., which position he resigned to become connected with the passenger department of the Canadian Northern. In September, 1903, he was appointed city ticket agent of the Northern Pacific, and in July, 1906, was appointed traveling passenger agent of the Canadian Northern at St. Paul, Minn., from which position he was recently promoted. His present title is assistant general passenger agent, and not general passenger agent, as stated in our issue of October 8.

Engineering and Rolling Stock Officers.

W. T. Dorman has been appointed a road foreman of engines of the St. Louis & San Francisco, with office at De Quincey, La.

F. B. Oren, supervisor of the Illinois Central at Fulton, Ky., has been appointed a roadmaster, with office at Mattoon, Ill., succeeding W. L. Love, resigned.

A. B. Warner, assistant chief engineer of the Chicago, Rock Island & Gulf, has been appointed chief engineer, with office at Fort Worth, Tex., succeeding C. M. Case, resigned.

W. C. Steers has been appointed assistant master mechanic of the Cincinnati, Hamilton & Dayton at Lima, Ohio, succeeding J. J. Kelker, resigned to go to the Denver & Rio Grande.

W. L. Jones, general foreman, car repairs, of the St. Louis-Louisville lines of the Southern at Princeton, Ind., has been appointed general foreman, car department, of the St. Louis, Brownsville & Mexico, with office at Kingsville, Tex.

J. W. Pfau, engineer of grade crossing elimination of the New York Central & Hudson River at New York, has been appointed engineer of construction, succeeding F. B. Freeman, who has become chief engineer of the Boston & Albany.

Purchasing Officers.

William A. Webb, assistant to vice-president of the Colorado & Southern at Denver, Colo., has been appointed also purchasing agent, succeeding F. W. Mahl, who has become assistant to the director of maintenance and operation of the Harriman Lines, at Chicago.

Special Officers.

Ivy L. Lee, head of the publicity bureau of the Pennsylvania Railroad Co., has resigned to take charge of the European business of Harris, Winthrop & Co., bankers, of New York and Chicago, who will establish branch offices in London and Paris, of which Mr. Lee will have charge. J. W. Lee, Jr., heretofore chief assistant in charge of the publicity bureau, becomes head of the bureau, with offices in New York and Philadelphia.

OBITUARY.

R. G. Root, manager, car accountant, secretary and treasurer of the Dairy Shippers' Despatch and the dairy department of the Lackawanna Line, with office at Chicago, died at Tucson, Ariz., on October 9.

Robert L. Engle, formerly a prominent railway engineer, died at Cincinnati, Ohio, on October 17. In his railway work Mr. Engle was connected in an important engineering capacity with the Mexican Central, the Atchison, Topeka & Santa Fe, the Denver & Rio Grande, the Missouri, Kansas & Texas and other roads.

George T. Barnsley, former chief engineer of the Wheeling & Lake Erie, Wabash-Pittsburgh Terminal and West Side Belt railways, died October 23, at Pittsburgh, Pa. Mr. Barnsley was born in Montgomery county, Pa., in 1864, and was educated at Swarthmore College. He began railway work in the engineering department of the Norfolk & Western as rodman in 1887 and was in the service of that company in various engineering positions for six years. Later he was engaged in engineering work with several other roads, including the Pennsylvania, spending much time in the study of bridge and tunnel construction, becoming an expert and authority on these subjects. In 1901, when the Wabash system decided to enter Pittsburgh, Mr. Barnsley was made resident engineer in

charge of the construction of the Pittsburgh terminals, including the Monongahela river bridge, leaving this position in June, 1905, to become chief engineer of the Wheeling & Lake Erie, the Wabash-Pittsburgh Terminal Railway and the West Side Belt, leaving railway work to become county road engineer in January, 1906. Mr. Barnsley was a member of the American Society of Civil Engineers, the Engineers' Society of Western Pennsylvania, the American Association for the Advancement of Science, the Franklin Institute and the Engineers' Club of Philadelphia.

Lyman McCarty, for the past 10 years assistant general passenger agent of the Baltimore & Ohio at New York, died October 21 following an operation. He was for a number of years passenger agent at Kansas City for the North Missouri Railroad, now part of the Wabash system. He was appointed general passenger agent of the Baltimore & Ohio at Kansas City, remaining at that place from 1880 to 1885, and was transferred to Philadelphia, Pa., as city passenger and ticket agent at the time the direct line of the Baltimore & Ohio was opened to that city. In January, 1892, he became city passenger agent in New York, and three years later was appointed general eastern passenger agent, remaining in that position until he was made assistant general passenger agent in 1899.

William Parker, principal assistant engineer of the Boston & Albany, died at Boston, Mass., September 30 from typhoid fever. Mr. Parker began railway work on the New York & New England and entered the service of the Boston & Albany in 1885 as a surveyor. He was promoted successively to the positions of assistant roadmaster, division engineer and principal assistant engineer, and, as such, had charge of several large engineering undertakings, notably the rebuilding and enlargement of docks and other terminal facilities at East Boston, Mass. He was also prominently connected with the work of abolition of grade crossings in Newton, Natick and Worcester. Mr. Parker was a member of the American Society of Civil Engineers and the Boston Society of Civil Engineers.

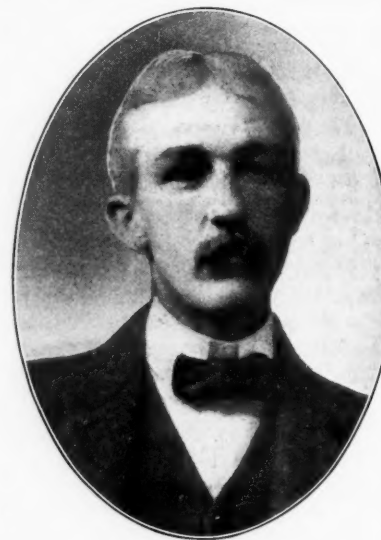
George T. Ross, superintendent of the Lake Superior division of the Northern Pacific, with office at Duluth, Minn., died at Duluth on October 16. Mr. Ross was born November 28, 1866, at Truro, N. S. He received a common school education and began railway work in 1884 with the Intercolonial Railway of Canada. In May, 1887, he was made agent of the Minnesota & Northwestern, now a part of the Chicago, Milwaukee & St. Paul. From August, 1887, to April, 1898, he was consecutively operator, roadmaster, clerk, clerk to superintendent, chief clerk to division superintendent and chief clerk to general superintendent of the Great Northern. In April, 1898, he became trainmaster of the Eastern Railway of Minnesota, now a part of the Great Northern, and afterwards became assistant superintendent. In July, 1901, he was made assistant general superintendent of the Montana Central, now a part of the Great Northern, and later was made general superintendent. From March to October, 1902, he was superintendent of the Eastern division of the Missouri Pacific at Sedalia, Mo., and for three years from the latter date he was on the staff of the second vice-president of the Chicago, Burlington & Quincy, engaged in special work. In May, 1905, he was appointed general superintendent of the Iowa district of the Burlington, and was afterwards transferred to the Missouri district. He resigned the latter position in March, 1908,



George T. Ross.

and in 1909 was appointed superintendent of the Northern Pacific at Duluth.

George D. Fowle, for 20 years signal engineer of the Pennsylvania, whose death on October 14 was noted in our last issue, was a pioneer in American railway signaling, having



George D. Fowle.

been engaged in the installation of the first interlocking plant at Broad street station, Philadelphia, in 1881. Mr. Fowle was born April 22, 1859, at Washington, D. C., though the home of his parents was in Alexandria, Va. He attended private schools until he was 17, when he became a regular apprentice in the motive power department shops of the Pennsylvania at Altoona. He was noted for studiousness and the painstaking care with which he performed every task. He was quick to learn and also excelled in gymnastics. At the end of

his four years' apprenticeship, in June, 1880, he became an apprentice draftsman, and then for two years was a regular draftsman. All his work in this line was of the finest quality. It was about this time that the first steps were taken by the Pennsylvania to establish a signal department, and H. F. Cox was sent to Europe to study the subject. On his return Mr. Fowle and two other men from the motive power department were assigned to work with Mr. Cox, and, as before stated, they put in the first interlocking plant at Broad street. No detector bars were used at that time, and Mr. Fowle, having had a cot put into the signal cabin, stayed there night and day for two weeks, directing the lever movements. Only by this strenuous course did he succeed in preventing the plant from being put out of service. Mr. Ely sent him an extra hundred dollars in recognition of this service. Immediately after this Mr. Fowle was put in charge of signals at Altoona, and on August 1, 1887, he was made signal engineer. The department, which had been under the charge of Mr. Cox, was then transferred to the chief engineer's department. Mr. Fowle's health failed soon after this and he was never in perfect health afterward. He was afflicted with deafness, and it was the increase of this which kept him away from the meetings of the Railway Signal Association, though he took an interest in its work, and was the twenty-fourth member of the association. In 1898 he was its president. The signal department of the Pennsylvania was transferred to the maintenance of way department in 1893. Mr. Fowle retired from the active management of the signal department on August 1, 1907, and since then had been consulting signal engineer. Mr. Fowle did much for the advancement of the art of signaling but was always extremely modest about his work. He was a loyal friend and many signalmen remember with gratitude his helping hand. He leaves a widow, a son and a daughter.

Belgian Equipment Output.

A Belgian engineer writes that there are now in Belgium 18 works which make locomotives, 21 which build passenger cars and 34 which build freight cars, with an aggregate capacity for 765 locomotives, 8,000 passenger cars and 25,000 freight cars. The value of the rolling-stock exported increased from 36,000,000 francs in 1897 to 194,000,000 in 1907. The largest increase has been in exports to South America, which began with 3,000,000 francs in 1902 and rose to 42,000,000 in 1907.

Railroad Construction.

New Incorporations, Surveys, Etc.

ABBEVILLE & NORTHWESTERN.—This company will sell bonds to secure funds for building from Abbeville, Ga., in Wilcox county, northwest through the corner of Pulaski county to Fort Valley, in Houston county, 58 miles, with a branch from Henderson west to Montezuma, 17 miles. It is expected to begin construction work at an early date. J. L. Bankston, president; J. B. Girardeau, secretary, both with offices at Abbeville. (March 19, p. 651.)

ALBANY, LEBANON & BEND.—Incorporated in Oregon, with \$10,000 capital, to build from Albany, Ore., southeast via Lebanon to Bend, about 100 miles. The incorporators include: J. C. Mayer, E. Kellenberger and G. B. Whitcomb.

ALBANY SOUTHERN (ELECTRIC).—An officer writes that bids are in for double-tracking this road from the south end of the viaduct in Rensselaer, N. Y., to North Chatham, 13 miles. Work is to be started by November 1 and it is expected will be finished by June 10. Luther Dean, with office at Albany, representing J. G. White & Co., of New York, will have charge of the work. (Oct. 22, p. 776.)

ALBUQUERQUE & EASTERN.—See New Mexico Central.

ANGELINA & NECHES RIVER.—An officer writes that a grading contract has been let to J. S. Moore, of Lufkin, Tex., for building several miles east of the Angelina river, from a point opposite the present terminus at Ratcliffe Bluffs, Tex., in Nacogdoches county. It is the intention of the company to extend the line eventually north in the direction of Chinero J. H. Kurth, president, Keltys. (Oct. 22, p. 776.)

ATCHISON, TOPEKA & SANTA FE.—President Ripley, in a newspaper interview, stated that the double-tracking of the road from Chicago to California was a goal being worked toward, but that it may be 15 years before the work is completed. All but 80 miles between Chicago and Kansas City has already been double-tracked, and this 80-mile gap will be closed by the end of the present year. The double-track also extends about 200 miles west of Kansas City, and besides there are several stretches elsewhere. The road is just beginning to feel the need for a second track on the line west of Albuquerque, N. Mex., and it will begin building stretches of second track wherever they are most needed on that part of the line. (Sept. 17, p. 520.)

BELLE FOUCHE VALLEY.—See Chicago & North Western.

CANADIAN NORTHERN.—According to press reports from Edmonton, Alb., surveys are to be started at once for a 75-mile line from a point on the main line at the McLeod river south into the Brazeau coal fields, at a point 150 miles west of Edmonton. Engineers are said to have almost completed the location of the main line down the North Thompson river, in British Columbia. The Brazeau branch is to be built at the same time as the main line through the mountains.

CANADIAN PACIFIC.—Work was finished recently double-tracking the line between Winnipeg, Man., east to Fort William, Ont., a total of 427 miles. Foley, Welch & Stewart were the contractors. (March 19, p. 659.)

According to press reports, the new main line known as the Wetaskiwin branch, which will connect Winnipeg, Man., with Edmonton, Alb., is about finished. It joins the line running from Calgary, north to Edmonton, at Wetaskiwin, Alb. (March 19, p. 659.)

CAROLINA, CLINCHFIELD & OHIO.—It is expected that the extension now under construction from Bostick, N. C., south to Spartanburg, S. C., which is on the Southern Railway and the Charleston & Western Carolina, 31.1 miles, will be finished on October 29.

CENTRAL RAILWAY OF CANADA.—Application is to be made for an extension of time to build this line. The company was organized about three years ago to build from Montreal, Que., west via Toronto and Ottawa to Port of Midland, on Georgian bay, in all about 670 miles. H. W. Raphael, acting secretary, Montreal, Que.

CHICAGO & NORTH WESTERN.—At the recent annual meeting of this company the stockholders approved the construction of new lines in South Dakota, Iowa, Illinois and Wisconsin, aggregating 465 miles. The new construction, on which preliminary work has been started, is as follows:

James River Valley & North Western.—From Blunt, S. Dak., north to Gettysburg, with a branch from Onida east to Hitchcock, in all 125.5 miles. (July 23, p. 168.)

Belle Fouché Valley.—From Belle Fouché, S. Dak., easterly and southeasterly to a connection with the Pierre, Rapid City & North Western, 88 miles. (Oct. 1, p. 612.)

Milwaukee, Sparta & North Western.—From Lindworm (Milwaukee), Wis., northwest via West Allis and Clyman to Sparta, 162 miles. (Sept. 24, p. 562.)

Des Plaines Valley.—From Proviso yards, Ill., north to Des Plaines and to a connection with the third and fourth tracks to Milwaukee, near Northfield, 21.86 miles. (Aug. 20, p. 339.)

Sioux City, Dakota & North Western.—From Hinton, Iowa, near Sioux City, north to a point near Hawarden, 28.18 miles. (Sept. 3, p. 426.)

An extension from Dallas, S. Dak., westerly through Tripp county, 39.12 miles. (May 28, p. 1144.)

CHICAGO, BURLINGTON & QUINCY.—According to press reports, the extension from Kirby, Wyo., south is to be continued for about 100 miles. Contract was let in July to the McArthur Brothers Co. for grading and bridging work on a section of 42 miles from Kirby, south. The extension is to run through the Wind river canyon to a connection with the Chicago & North Western at Shoshoni. (July 23, p. 167.)

CHICAGO, MILWAUKEE & PUGET SOUND.—According to press reports, surveys are to be started at once for a branch from Rosalia, Wash., north to Spokane, 35 miles. The proposed line is to parallel the Northern Pacific. It is expected the contracts for building will be let soon.

CLEARWATER SHORT LINE.—See Northern Pacific.

COAHUILA, CHIHUAHUA & NORTH WESTERN.—An officer writes that contracts are now being let to build this line from a point on the International division of the National Railways of Mexico at Monclova, in the state of Coahuila, west to a crossing of the Rio Concho at Julimes, thence west to Chihuahua, in the state of the same name, which is on the Kansas City, Mexico & Orient, the Mexican Central and the Mexico North Western, about 350 miles. The line will traverse a coal and iron section, as well as a rich agricultural country. Pablo Casassus, president, and T. S. Abbott, chief engineer, Saltillo, Coahuila. (Oct. 22, p. 777.)

CONNELL NORTHERN.—See Northern Pacific.

CUBA RAILROAD.—Sir William C. Van Horne, president of this company, is quoted as follows: Work will be rushed this winter to have the extension now under construction in operation by August, 1910. The rainy season will soon be over and the work will progress much more rapidly. The extension leaves the main line at Marti, in Camaguey province, running thence to Bayamo, at which point a branch runs southwestward to the port of Manzanillo, the main extension continuing southeastward to Palma Soriano, which is already connected with San Luis by a portion of the new line already in operation. The new line will shorten the time between Havana and Oriente. The Cuban government has granted a subsidy of \$8,000 for each of the 160 miles of the extension. (Oct. 15, p. 725.)

DES PLAINES VALLEY.—See Chicago & North Western.

GRAYS HARBOR & PUGET SOUND.—See Union Pacific.

INDIANAPOLIS SOUTHERN.—According to press reports plans are being made to build an extension from Bloomington, Ind., south to a stone quarry district, about five miles.

JAMES RIVER VALLEY & NORTH WESTERN.—See Chicago & North Western.

LAKE CREEK & COEUR D'ALENE.—See Union Pacific.

LAWTON & FORT SILL (ELECTRIC).—Incorporated in Oklahoma, with \$200,000 capital and office at Lawton Okla. The company plans to build from Lawton north to Fort Sill, five miles, thence to Medicine Park and other points in Comanche

county, in all about 20 miles. The incorporators include: J. D. Sleeper, of Lawton; S. Smith, Oklahoma City; D. K. Sleeper, J. H. Miller and W. H. Pattie, all of Tulsa.

MEXICAN ROADS.—The San Jose Lumber Co. has issued bonds amounting to \$400,000 gold, and will build 31 miles of narrow-gage line from the Pacific port of Manzanillo to the San Jose de Miraflores timber tract in the state of Colima. About 12 miles of railway in addition will be built on the property. R. F. Horton, general manager, and James H. Clark, engineer, Manzanillo.

Escobar Brothers, of Altar, in the district of Altar, state of Sonora, Mex., have applied for a concession for two lines in that district. One is to run from Santa Ana, on the Sonora line of the Southern Pacific, west via Altar to Puerto de Lobos, on the Gulf of California, and the other from Sasabe, on the northern border of Sonora, south to Hermosillo, the capital of Sonora. California capitalists are interested. The lines will open up an extensive mineral section.

Work has been resumed on the line which is to run from Pachuca northwest to Zimapan, in the state of Hidalgo, about 63 miles. Richard Honey, an English banker of Mexico City, is the principal promoter. The line will be built to develop a mining section, through which about 12½ miles of railway were built some time ago.

The Mexican Northern Power Co., which is a Canadian company, proposes to build a large dam across the Conchos river, in the state of Chihuahua. Contracts have been let to S. Pearson & Son, Ltd., for building the dam, also for building 20 miles of railway from the dam to Santa Rosalia, on the National Railways of Mexico. Frederick Adams is chief engineer of S. Pearson & Son, with headquarters at Mexico City.

MILWAUKEE, SPARTA & NORTH WESTERN.—See Chicago & North Western.

MINIDOKA & SOUTHWESTERN.—See Union Pacific.

MISSOURI, OKLAHOMA & GULF.—According to press reports this road will be opened for operation by December 15 from Wagner, Okla., south via Dennison, Tex., to Sherman, 217 miles. (Oct. 22, p. 778.)

MISSOURI RIVER RAILWAY.—See Northern Pacific.

NEW MEXICO CENTRAL.—This company, formerly the Santa Fe Central, is said to have settled all preliminaries and the prospects are good for immediately resuming work on an extension connecting Albuquerque with the rich coal deposits in central New Mexico. The company now operates 116 miles of railway in New Mexico and has projected extensions aggregating 60 miles, including one from Moriarty Junction west to Albuquerque, 47 miles, projected by the Albuquerque & Eastern, which has been taken over by this company.

NORTHERN PACIFIC.—The report of this company for the year ended June 30, 1909, under date of Sept. 27, shows that work was under way on new lines, double track, grade revisions and line changes as follows: From Lake Park, Minn., west to Glyndon, second main track is being laid on 26.83 miles and similar work has been finished from Wheatland, N. D., west to Buffalo on 11.2 miles. Contracts have been let and work is under way on the Missouri River Railway from Mandan, N. D., north along the Missouri river, 53 miles; also from Mandan, south along the same river for 72 miles. Contract has been let and work is expected to be finished in May, 1910, on the West Dakota Railway, building 90 miles in North Dakota. Contract has been let for building 50 miles of the Missouri River Railway from Glendive, Mont., northeasterly along the Yellowstone river, and grading is now under way. The Shields River Valley Railway, building 23 miles in Montana, has grading finished and expects to open the line by December 1. Line changes, grade revisions, and second track work on 69.1 miles, from Garrison, Mont., west to Missoula, has been finished. Surveys under way and contracts let for work on the first 38 miles of a line to be known as the Clearwater Short Line Railway, Lo Lo Pass Line, from Lo Lo station, Mont., west to Lo Lo Pass. Work has been finished revising the grades and improving the Coeur d'Alene branch to secure a 0.5 per cent. grade on the present location from De Smet, Mont., west to St. Regis, 72 miles. From St. Regis

east then north to Paradise, 21.8 miles, a new line has been finished, as well as on a change of line and grade from White Pine Hill, Mont., on 28.4 miles. Contracts are let and grading is now under way on the Connell Northern, from Connell, Wash., north to Adrian, 62 miles. A contract has also been let and work is about to be started on the Ritzville branch in Washington, to be 38 miles long. Double track has been laid between Auburn, Wash., and Meeker on 7.5 miles. The revision of line and grading for second main track, and track laying, is about finished on 29.9 miles from Vancouver, Wash., north to Kalama. Second track will be finished this fall between Tenino, Wash., and Chehalis, 15 miles. The double-tracking and revision work is to be continued south to Kalama, 66 miles from Tenino.

NORTHWESTERN RAILROAD.—See Union Pacific.

PENNSYLVANIA.—Improvements are being made on the main line carrying out the general plan of eliminating grade crossings between Altoona, Pa., and Pittsburgh. Six highway crossings are to be abolished. Work now under way at Greensburg includes the removal of a tunnel, a change of grade and the elimination of one grade crossing. At Johnstown an overhead bridge is to be built, as well as an undergrade tunnel for pedestrians, just west of the passenger station. At Galitzin, West Chestnut street crosses the main line tracks at grade, and the plans call for an undergrade bridge at that place. Two grade crossings at the east end of Cresson are to be eliminated, and the subway for pedestrians is being constructed west of the station. The grade crossing at Grant street, in South Fork, is to be abolished, and an overhead bridge built in its place. The new bridge will be over the main tracks, the Conemaugh river and the tracks of the Summerhill branch. Between Johnstown and Altoona, 37.4 miles, there will remain but three important grade crossings. Plans are being made to abolish one of these crossings. Since 1902 about 44 grade crossings have been eliminated on the Pittsburgh division, and with the completion of the work now authorized will bring the total removed up to 50, leaving 76 on the main passenger line between Pittsburgh and Altoona. (Sept. 17, p. 521.)

An officer writes that contract has been given to A. L. Anderson & Brothers, of Altoona, Pa., to building a connecting link on the Bedford & Hollidaysburg railway, from Imler, Pa., to Brooks Mills. There will be a large stone bridge over the Juniata river and one over the Bedford pike.

PHILADELPHIA & READING.—An officer writes that contracts have been re-let to the James McGraw Co., Arcade building, Philadelphia, Pa., for work which the previous contractors were unable to finish in time. The improvements are part of the work of abolishing grade crossings in Philadelphia, between Green street and the Richmond branch. The work consists of the foundations for the steel viaduct to be built on Ninth street, and the walls and filling for the new freight yard at Ninth and Master streets, and forms part of the work between Columbia avenue and Green street, for which all the main contracts have been let for some time. Contracts are also let and work is under way on the bridges, masonry, etc., between Seventeenth and Indiana streets, and on the Richmond branch crossing just south of Wayne junction. (April 16, p. 872.)

PITTSBURGH, POMEROY, PORTSMOUTH & CINCINNATI (ELECTRIC).—Application has been recently made for rights-of-way through Aberdeen, Ohio, for a line being backed by Pittsburgh and Cincinnati capitalists. Rights-of-way through the various counties and towns along the north bank of the Ohio river to Brown county are already secured and consents are being obtained through Clermont and Hamilton counties. The promoters expect to have the line in operation between Pittsburgh and Cincinnati in three years.

QUINCY WESTERN.—An officer writes confirming the report that this company has taken over the Quincy & Eastern and that work is now under way on about seven miles of line from Hartwell Station, Cal. The line will eventually be 17 miles long. (Oct. 15, p. 727.)

SANTA FE CENTRAL.—See New Mexico Central.

SIOUX CITY, DAKOTA & NORTH WESTERN.—See Chicago & North Western.

SHIELDS RIVER VALLEY.—See Northern Pacific.

SOUTHERN PACIFIC OF MEXICO.—Final surveys for the extension through the canyons of the Sierra Madre, near the boundary of the state of Jalisco and the territory of Tepic, have been finished and a decision on the route will be announced soon, when bids will be asked for the work. It is understood that the line will have a grade of 1 per cent., which will involve building 20 miles of mountain road, where the construction work will be very heavy. The Grant Brothers Construction Co., the International Contracting Co., Stewart Brothers, of New York, and other contractors will bid on the work. The Grant Brothers Construction Co. have resumed work, which was stopped several months ago on account of the rainy season in the territory of Tepic, and the men now at work are only 22 miles from the Santiago river. Pending the construction of a large steel bridge the Santiago river will be crossed on a temporary structure and the work pushed to the city of Tepic, thence to the canyons of the Sierra Madre.

According to a consular report construction work through the state of Sinaloa, on the Southern Pacific line, is being pushed, and the work is finished to Rosa Morada, 115 miles south of Mazatlan. It is thought that the entire line south to Guadalajara will be finished by 1912. (Sept. 17, p. 521.)

TEXAS ROADS.—According to press reports S. E. Hurlbut, associated with the Brownwood Commercial Club, is back of a project to build a line from Brownwood, Tex., north via May to Rising Star, about 30 miles.

TONOPAH & TIDEWATER.—Work is said to have been started on a 13-mile branch from Tecopa, Cal., to mines in the southeastern part of Inyo county. (July 23, p. 169.)

UNION PACIFIC.—The report of this company for the year ended June 30, 1909, under date of October 5, shows that work is under way as follows: Hershey, Neb., northwest to Northport, 52.63 miles, track laid on 46.38 miles and grading finished on 4.77 miles additional; Watson's Ranch, Neb., west to North Platte, 88.25 miles, grading under way on 10.40 miles; Sand Creek, Colo., north to St. Vrain, 17.52 miles, grading finished on 13.10 miles; St. Vrain, northeast to La Salle, 22.95 miles, graded for 8.88 miles and work under way on 14.07 miles; Greeley, Colo., to Briggsdale, 26.16 miles, graded for 20 miles and work under way on six miles; Clover, Colo., to Hungerford, 13.16 miles, graded for 6.24 miles and work under way on the rest of the line. Onaga, Kan., northwest to Garden, 32.44 miles, graded for three miles and work under way on 14 miles.

The Minidoka & Southwestern, from Twin Falls, Idaho, to a point 10 miles south of Hollister, 29 miles, has track laid on 0.37 miles, grading finished on 7.61 miles additional and work is under way on the rest of the line.

The Northwestern railroad, from Blakes, Ore., northeast to Homestead, 58 miles, has track laid on 39.61 miles and is graded for 13.86 miles additional.

The Lake Creek & Coeur d'Alene, from Lockwood, Wash., east to Farmington Lodge, Idaho, 12.36 miles, has track laid on 0.33 miles, is graded for 1.87 miles additional, and work is under way on the rest of the line.

An officer of the Grays Harbor & Puget Sound writes that work is now under way by Caughren, Winters, Smith & Co., of Spokane, Wash., building from Centralia, in Lewis county, Wash., following the south bank of Chehalis river northwest through Thurston and Chehalis counties, passing south of Gate City, Porter, Elma, Satsop, Montesano and through Cosmopolis, thence over the eastern end of Grays Harbor through Aberdeen to a point a short distance west of Hoquiam, about 60 miles. Maximum grade will be 0.62 per cent. except at bridge approaches in Aberdeen and Hoquiam, and maximum curvature 6 deg. There will be three steel bridges on the line. Track has been laid on 10 miles. J. R. Holman, chief engineer of the Grays Harbor & Puget Sound, Seattle. (Oct. 1, p. 663.)

WABASH & NORTHERN INDIANA TRACTION.—According to press reports work is now under way from Wabash, Ind., northeast via North Manchester to Warsaw, about 75 miles. J. A. Barry, of New Albany, and W. L. Moyer, of New York, are back of the project.

WESTERN DAKOTA RAILWAY.—See Northern Pacific.

Railroad Financial News.

ALBANY & SUSQUEHANNA.—See Delaware & Hudson.

BALTIMORE & OHIO.—See Chicago Terminal Transfer, also Winchester & Potomac.

BUFFALO, ROCHESTER & PITTSBURGH.—The Clearfield & Mahoning, which is leased to the B. R. & P., is to increase its capital stock from \$750,000 to \$1,000,000, and stockholders of the B. R. & P. are to meet November 22 to vote on guaranteeing dividends of 6 per cent. (the amount now guaranteed on the outstanding Clearfield & Mahoning stock) on the additional \$250,000 stock to be issued. The money raised by the sale of the stock is to be used to improve the line that is to be leased to the Lake Shore.

A trackage agreement has been made with the Jamestown, Franklin & Clearfield and the Lake Shore & Michigan Southern, which leases the Clearfield road, by which the Lake Shore is granted trackage rights from Falls Creek, Pa., to Clearfield, 31 miles, for which the Lake Shore is to pay \$42,000 a year and to maintain the line. The agreement, which extends over 25 years, provides for 2 per cent. on the cost of future improvements, made by mutual consent, to be paid in addition to the annual rental.

CHESAPEAKE & OHIO.—T. P. Shonts, president of the Chicago & Alton, has been elected also a director and a member of the executive committee of the Chesapeake & Ohio, succeeding John W. Castles, deceased.

CHICAGO & NORTH WESTERN.—Oliver Ames has been elected a member of the executive committee, succeeding Marshall Field, deceased.

CHICAGO, BURLINGTON & QUINCY.—See Chicago Terminal Transfer.

CHICAGO, CINCINNATI & LOUISVILLE.—Judge Lacombe, in the United States Circuit Court, has authorized the agent of the shareholders of the National Bank of North America to sell for \$263,000 cash 16 notes of the C. C. & L. held as collateral for a loan to Newman Erb.

CHICAGO TERMINAL TRANSFER.—The *Chicago Record-Herald* of October 17 states positively that arrangements have been completed by which the Baltimore & Ohio is to pay the Chicago, Burlington & Quincy about \$5,500,000 for the \$16,000,000 stock of the Terminal company held by the Burlington. This, together with previous purchases by the Baltimore & Ohio, will give it a half interest in the Terminal company, the other half interest being owned by the Pennsylvania.

CINCINNATI, HAMILTON & DAYTON.—Speyer & Co. and Kuhn, Loeb & Co., both of New York, have arranged to take \$12,500,000 first and refunding mortgage 50-year 4 per cent. bonds of the C. H. & D., of which the principal and interest are guaranteed unconditionally by the Baltimore & Ohio.

CUBA EASTERN.—See Guanganamo & Western.

DELAWARE & HUDSON.—The United States Supreme Court has refused to review the decision of the Circuit Court of Appeals sustaining a lower court in a judgment of \$1,107,923 against the Delaware & Hudson in favor of the Albany & Susquehanna. This amount represents the saving in interest by the refunding of bonds of the A. & S. by the D. & H. In future the D. & H. will have to increase its rental payments by \$120,750. The rental payment is now 9 per cent. dividends paid on \$3,500,000, and the increased rate will be about 12 per cent.

GUANGANAMO & WESTERN.—This company has been incorporated, with \$5,750,000 stock, of which \$2,750,000 is first preferred, \$250,000 second preferred and \$2,750,000 is common, to take over the property of the Cuba Eastern.

ILLINOIS CENTRAL.—Robert S. Lovett and Henry W. de Forest have been elected members of the board of directors, succeeding E. H. Harriman, deceased, and Charles M. Beach, resigned.

INTERNATIONAL & GREAT NORTHERN.—It is understood that one

of the points of differences between the reorganization committee of the International & Great Northern and the Texas Railroad Commission which will have to be settled before the committee can make definite plans for taking the road out of the hands of the receiver, is in regard to the method of valuation of the property. The railway company asks that a reappraisal of its property be made allowing for the enhanced value of terminals, franchises and rights-of-way which would form the security for the proposed new mortgage. The railway commission says that the present value should be reached by adding to the former appraisal value the amount of money since paid for permanent improvements.

JAMESTOWN, FRANKLIN & CLEARFIELD.—See Buffalo, Rochester & Pittsburgh.

LAKE SHORE & MICHIGAN SOUTHERN.—See Buffalo, Rochester & Pittsburgh.

MAINE CENTRAL.—A. A. Lawrence, Alexander Cochrane, E. J. Rich and E. A. Ryder, all directors of the Boston & Maine, have been elected also directors of the Maine Central. Three of them were elected to fill vacancies and the board of directors was increased from 14 members to 15.

MISSOURI, KANSAS & TEXAS.—James Campbell has been elected a director and a member of the executive committee, succeeding James B. Potter, resigned.

NEW MEXICO CENTRAL.—See an item in regard to this company under Railroad Construction.

OTSEGO & HERKIMER.—The company has asked permission of the New York Public Service Commission, Second district, to issue \$1,500,000 common stock and \$500,000 first mortgage bonds, \$300,000 second mortgage bonds and \$700,000 third mortgage bonds. These securities are to be issued in connection with the taking over of the property of the Oneonta & Mohawk Valley, to which the O. & H. is the successor. The electric interurban road runs from Oneonta, N. Y., to Mohawk, with a branch to Cooperstown.

ST. JOSEPH & GRAND ISLAND.—R. A. Brown, general counsel, has been elected a director, succeeding E. H. Harriman, deceased.

SEABOARD AIR LINE.—In connection with arrangements being made to terminate the receivership on November 4 the receiver's certificates, series A, B and C, totaling \$7,510,000, have been called for payment on November 6.

WINCHESTER & POTOMAC.—A press despatch dated Winchester, Va., says that the control of this company has been acquired by the Baltimore & Ohio. The line runs from Harpers Ferry, Va., to Winchester, 32 miles.

FOREIGN RAILWAY NOTES.

The Prussian State Railways are to contract for 492 locomotives, to be delivered between April and July. Only works which have heretofore filled orders for Prussia may contract.

The winter time-table of the Prussian State Railways, which went into effect Oct. 1, shows that first-class passenger cars are abolished on a large number of passenger trains—a reform begun on a modest scale a few years ago.

The Prussian State Railways contracted for 464,000 tons of rails in 1907, 372,000 in 1908 and 312,000 in 1909. The work of renewing the busy lines with heavier rails has been going on for several years, and the decrease has been doubtless partly because this work approaches completion and partly because net earnings are smaller.

On the 9th of August the rails were laid on the Yünnan Railway, in southern China, for 217 miles from the border of Tongking, at Laokai, leaving 79 miles to complete this very costly line to Yünnan. This is a continuation of the line from the French port of Haiphong northwestward, which will be in all 534 miles long, through a very mountainous country.

Late News.

The Pennsylvania is said to be figuring on 10,000 freight cars. This is not yet confirmed.

The date of the sale of the Norfolk & Southern under foreclosure has been fixed for December 7.

Chairman J. J. Hill, of the Great Northern, is quoted as saying that the Hill lines are going to build a new union station in 1910, at Minneapolis, Minn.

Robert S. Lovett, president of the Union Pacific, has been elected a member of the board of managers of the Delaware & Hudson, succeeding E. H. Harriman, deceased.

The Baltimore & Ohio has ordered 2,400 steel hopper cars from the Standard Steel Car Co., 1,000 steel hopper cars from the Cambria Steel Co., and 1,000 steel underframe box cars from the American Car & Foundry Co.

President Harahan says that the Illinois Central will not elect a vice-president to succeed Ira G. Rawn, who becomes president of the Chicago, Indianapolis & Louisville. The duties of the vice-president will be divided between President Harahan and General Manager F. B. Harriman.

At the special meeting of the New York, New Haven & Hartford on October 27 it was unanimously voted to increase the capital stock by \$50,000,000, making \$171,000,000 of stock authorized. All of the new stock is to be issued at once and paid for in four semi-annual installments at 125. Payments on the new stock draw interest at the rate of 6.4 per cent. until the dividend of 8 per cent. is paid on their shares. John L. Billard was elected a director, making the number of directors 25.

Stockholders of the Atlantic Coast Line will be asked on Nov. 16 to agree to an issue of \$200,000,000 bonds bearing interest not exceeding 4 per cent. The proceeds from the sale of these bonds from time to time are to be used for the payment or retirement of underlying mortgage bonds of the Atlantic Coast Line Railroad, for the retirement by exchange of the 4 per cent. certificates of indebtedness, not exceeding \$23,562,500, and for funding other indebtedness, paying for construction or for other corporate purposes. The meeting will also be asked to consider an alternative method of retiring these certificates of indebtedness by the issue of an equal amount of its 4 per cent. debenture bonds, these debentures to be convertible into common stock of the railway upon such terms as the directors may determine. The meeting will also act upon a proposal to increase the common stock outstanding to such an extent as will allow the railway company, by issuing the stock already authorized by stockholders but not sold, to retire its debenture bonds, if desired by the holders thereof.

The New York Central Lines have ordered 325 locomotives, as follows: New York Central & Hudson River 25 consolidation, 25 Pacific, 23 switch, 28 miscellaneous; Lake Shore & Mich. Southern 50 Pacific, 40 consolidation, 10 switch; Michigan Central 10 Pacific, 30 consolidation, 5 switch, 1 decapod; Clev., Cinn., Chic. & St. L. 20 consolidation, 15 switch, 10 miscellaneous; Pittsburgh & Lake Erie 20 miscellaneous; Chic., Indiana & Southern 6 consolidation; Indiana Harbor Belt 3 switch; Rutland 4 ten-wheel.

Orders for 197 passenger cars were placed, as follows: 118 standard vestibule coaches, 53 steel baggage cars, 10 dining cars, 10 milk cars, and 6 steel buffet cars. The distribution of these is as follows: New York Central & H. R. 86, Lake Shore 66, Michigan Central 30, Big Four 8, P. & L. E. 5, C., I. & S. 2.

Orders for the following 17,850 freight cars were placed: 7,400 steel underframe box, 5,300 self-clearing steel hoppers, 1,500 low-side gondolas, 2,000 combination coal cars, 500 coke cars, 500 produce cars, 400 flat cars, 150 Rodger ballast cars, and 100 stock cars. These cars will be divided among the various lines, as follows: New York Central & H. R. 5,650, Lake Shore 5,500, Michigan Central 2,300, Big Four 1,500, P. & L. E. 2,500, Rutland 400—total 17,850.

Orders for 165,000 tons of rails are being placed, for division equally between lines east and lines west of Buffalo.

Supply Trade Section.

The Milwaukee Car Manufacturing Co., Milwaukee, Wis., has authorized the building of an addition to its erecting shop, to cost about \$15,000.

The American Bridge Co., New York, has announced its intention to build a plant at Gary, Ind. It will have an initial capacity of 10,000 tons of fabricated steel per month.

The Harlan & Hollingsworth Corporation will build an addition to its plant at Wilmington, Del. The new building is to be 173 ft. x 300 ft., built of concrete and steel.

The Illinois Steel Co., Chicago, has announced that an additional structural mill will be built at the South Chicago plant. The new mill is to have a capacity of 15,000 tons a month.

The O. M. Edwards Company, Syracuse, N. Y., is to furnish the window fixtures on 80 cars for the Pittsburgh Railways, now being built by the J. G. Brill Co., Philadelphia, Pa.

John H. Nicholas, formerly assistant general sales agent of the Lackawanna Steel Co., New York, has resigned to become vice-president of the Lackawanna Bridge Co., Lackawanna, N. Y.

The Isthmian Canal Commission asks bids up to November 5 on leather belting, rubber valves, gaskets, iron pipe fittings, cable screws, dies and miscellaneous supplies. (Circular No. 541.)

Geo. W. Daves, at present signal engineer of the Chicago & Alton at Bloomington, Ill., has resigned and after November 1 will be connected with the signal department of the Railroad Supply Co., Chicago.

W. C. Bradbury, 4269 Cook avenue, St. Louis, Mo., has joined the selling force of the O. M. Edwards Co., Syracuse, N. Y. Mr. Bradbury is to look after the territory adjacent to St. Louis and also the Southwest.

The Springfield Manufacturing Co., Bridgeport, Conn., maker of grinding machinery, has been bought by F. H. Brandes, who for the last thirteen years has been superintendent of the Bullard Machine Tool Co., Bridgeport.

R. D. Gordon has been appointed sales manager of the Miller & Vidor Lumber Co., Galveston, Tex., with headquarters at Galveston. This is a new office and does not conflict with the work of T. E. Meece, who remains with the company as sales agent.

Guy H. Gibbs, who has been with the Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa., for the past eight years, four of which have been with that company's Cincinnati office, is now with the Western Electric Co., Chicago, at Cincinnati.

DeWitt C. Smith, formerly manager of the paint department of the Joseph Dixon Crucible Co., Jersey City, N. J., has resigned to become manager of the Philadelphia branch of the Detroit Graphite Co., Detroit, Mich., with headquarters in the Land Title building, Philadelphia, Pa.

The Safety Car Heating and Lighting Co., New York, has closed a contract with the United States Light House Board for furnishing 18 B-III Pintsch gas buoys, complete with lanterns and 20 additional Pintsch gas buoy lanterns. The lanterns above mentioned are to be supplied with inverted incandescent mantles.

E. H. Symington, formerly manager of western sales of the T. H. Symington Co., Baltimore, Md., with headquarters in Chicago, who has been absent from duty for the past three years, due to injury sustained by being kicked by a horse, has fully recovered and has been stationed at the Rochester plant, Rochester, N. Y., as works sales manager.

The Hicks Locomotive & Car Works, Chicago, has received an order from the Denver, Northwestern & Pacific for 100 rebuilt gondolas. These cars were bought instead of new equipment for which the company was reported in the market in our issue of October 8. The Hicks company also has an

order from the Pacific Electric Co., Los Angeles, Cal., for 150 rebuilt side dump cars.

Within the last two weeks the Pilliod Company, Swanton, Ohio, has received orders for Baker-Pilliod valve gears for four consolidation engines for the Mexican Railway, two ten-wheel engines for the Missouri & North Arkansas, five Mallet compounds for the Norfolk & Western, 15 ten-wheel passenger engines for the Seaboard Air Line and six switch engines for the Central of New Jersey.

Charles F. Spalding, president of the Spalding Lumber Co., and director in a number of prominent companies, died at his home in Chicago, October 24. He was born in 1865, educated at Exeter academy, learned the lumber business in northern Michigan and at the death of his father took control of the Spalding Lumber Co. He built the Jesse Spalding, one of the first steel steamers on Lake Michigan.

Solid truss high-speed brake-beams, made by the Davis Solid Truss Brake-Beam Co., Wilmington, Del., have been specified for the 10 coaches ordered by the New York, Ontario & Western from Harlan & Hollingsworth. Davis solid truss brake-beams have been specified for the 750 gondola cars ordered by the Lehigh Valley from the Standard Steel Car Co., and the 250 gondolas ordered from the Cambria Steel Co.

The Western Elaterite Roofing Co., Denver, Colo., reports a constant increase in the demand for Elaterite roofing for roundhouses, shops and other railway buildings. This roofing has been in the western market for over ten years and is being recommended by railway companies and large users of roofing material as most satisfactory. Elaterite roofing consists of a base of Elaterite roofing cement reinforced with a burlap center and finished with a saturated wool-felt backing and a flake-mica surface. It is claimed it will give many years of service without any maintenance expense, as no recoating is required.

R. L. McIntosh, assistant mechanical engineer of the Missouri Pacific, has resigned to go to the Commonwealth Steel Co., St. Louis, Mo., at its Granite City shops. Mr. McIntosh was born in Milwaukee in 1879, graduated from the College of the City of New York in 1901 and served as special apprentice in the Susquehanna shops of the Erie, and then as mechanic in the West Milwaukee shops of the Chicago, Milwaukee & St. Paul. From 1901 to 1905 he was employed by the Northern Pacific as material inspector, engineer of tests, mechanical office assistant and shop assistant. He was made assistant mechanical engineer of the Missouri Pacific in 1906.

The Pacific Car & Foundry Co. has bought land at Portland, Ore., for a plant with a capacity for building 10 freight cars a day, as well as doing general repair work on locomotives. The company owns the W. L. Holman Co. plant in San Francisco, Cal., and is building a plant at Richmond, Cal., which is to have a capacity of 10 freight cars a day and eight passenger cars a month. The Holman plant is to be continued in operation for building passenger cars and street railway cars. The president of the company is H. A. Bowen, general superintendent of the National Dump Car Co. J. W. Riess, first vice-president, is general manager of the Holman company. W. H. Judson, second vice-president, has been connected with the American Car & Foundry Co. for a number of years.

The General Electric Co., Schenectady, N. Y., continues to show an improvement in business and its orders are running about 85 per cent. of what they were in the best year since the company was organized. Although sharp competition has narrowed the margin of profit on certain electrical apparatus, the showing of the company for the current fiscal year will be much more favorable than in the preceding year. A substantial surplus after the payment of the 8 per cent. dividend will be shown. The company has been spending millions of dollars for the purpose of remodeling and systematizing its plants, and the result has been a very material reduction of operating costs. Besides, the company

has under construction work that will add several hundred thousand square feet to its floor space.

The S. Obermayer Co., Cincinnati, Ohio, Chicago and Pittsburgh, Pa., after several years' experimenting, has placed on the market a new product for the foundry, called Bull Dog core wash. It is so called because of its adhesive qualities. In the foundries, where it is now in use, there is claimed to be no trouble caused by the core wash burning off or peeling off. The largest castings can be made by using it and it will be found more satisfactory. In making cores no matter how much pains may have been taken in other ways all the good work will go for naught if the right kind of core wash is not used for the job. The only use for a core wash is to prevent the iron from sticking to the sand and to produce a clean, smooth surface. This is exactly what the manufacturers claim that Bull Dog core wash will do.

U. S. Steel Earnings.

The United States Steel Corporation has declared a quarterly dividend of 1 per cent. on the common stock, putting it on a 4 per cent. instead of a 3 per cent. yearly basis. The unfilled orders on hand September 30 amounted to 4,797,000 tons, an increase of 740,000 tons as compared with the amount on June 30. It is the largest for the end of a third quarter since 1906, when it was 7,937,000 tons. The income account for the quarter ended September 30, as compared with the same period last year, is as follows:

	1909.	Increase.
Total earnings	\$38,246,907	\$11,140,633
Sinking fund, subsidized company's depreciation and reserve funds	7,391,888	1,596,031
Balance	\$30,855,019	\$9,544,602
Interest and sinking fund, U. S. Steel bonds	7,311,962	Unchanged
Balance	\$23,543,057	\$9,544,602
Preferred dividends	6,304,919	Unchanged
Balance	\$17,238,138	\$9,544,602
Common dividends	5,083,025	2,541,512
Balance	\$12,155,113	\$7,003,090
† Appropriations	\$10,000,000	\$10,000,000
Surplus	\$2,155,113	*\$2,996,910

*Decrease. †Appropriation for additions to property, construction, etc.

TRADE PUBLICATIONS.

Dump Cars.—The Russell Wheel & Foundry Co., Detroit, Mich., has issued a booklet illustrating and describing its heavy-duty dump cars.

Gas Engines, Tanks and Pumps.—Fairbanks, Morse & Co., Chicago, have issued catalogue No. 80D on gas engines of sizes up to 12 h.p. Catalogue No. 65F is on windmills, tanks and pumps.

Motor Cars.—The Buda Foundry & Manufacturing Co., Chicago, has issued a 12-page booklet describing six models of motor cars built by the company, including the two models recently taken over from the Stover Motor Car Co.

Car Wheels.—The Nickelized Castings Co., Pittsburgh, Pa., has published a pamphlet giving a summary of tests of nickelized chilled iron wheels. The tests included drop tests and the sliding of wheels under a heavy car to develop flat spots.

Frogs and Switches.—General catalogue No. 1, of the St. Louis Frog & Switch Co., St. Louis, Mo., is a 159-page book, bound in cloth, fully illustrated, showing a wide variety of frogs, switches, etc. Diagrams of different switches, with dimensions, bills of material, etc., are included, as well as information regarding curving rails, etc.

Train Lighting.—The Willard Storage Battery Co., Cleveland, Ohio, has published an instruction book for the care and maintenance of train lighting batteries. The book, after describing the Willard batteries, gives general information on their characteristics, and then fully describes their use, taking up different troubles and their remedies.

Grinding Machinery.—The Diamond Machine Company, Providence, R. I., has just issued a catalogue of 216 pages covering its complete line of grinding and polishing ma-

chinery. This publication shows for the first time the company's heavy face grinders, lathe grinding attachments and center grinders and diamond disc and emery ring grinders.

RAILROAD STRUCTURES.

CHATTANOOGA, TENN.—The Central of Georgia is to build a brick freight house 42 ft. x 190 ft., to cost \$50,000, including tracks.

CINCINNATI, OHIO.—The Central Union passenger station was damaged by a fire on October 21, which originated in the claim department of the Cleveland, Cincinnati, Chicago & St. Louis, in the upper part of the building and did not interfere seriously with traffic, except that the telegraph office was paralyzed for a short time. The loss is stated in press despatches as \$25,000. Many valuable records were destroyed, the value of which is not included in the estimate of damage.

DENVER, COLO.—The Suburban Depot Co. has authorized the issue of \$250,000 in bonds to cover the cost of building the new tramway loop and interurban station at Fourteenth and Curtis streets.

FT. WAYNE, IND.—The Pennsylvania Lines have prepared plans for a passenger station.

FORT WILLIAM, ONT.—An officer of the Canadian Pacific writes that contract has been let to the J. McDiarmid Co., of Winnipeg, for putting up a passenger station to have one story, 34 ft. by 167 ft., and three stories, 50 ft. x 105 ft., of fire-proof construction, to cost \$100,000. (Oct. 22, p. 781.)

GREAT FALLS, MONT.—The Great Northern has let the contract to the Piper Construction Co., Billings, Mont., for a passenger station to cost \$75,000. Work will begin at once. The building is to be completed July 1, 1910. The station will be 250 ft. long, 44 ft. wide, one story high, and will be built of pressed brick with sandstone trimmings. The main entrance is to be through the base of an octagonal clock tower 150 ft. high. The floor plan will include a lunch room and kitchen, 44 ft. x 44 ft.; men's waiting room, 44 ft. x 50 ft.; women's waiting room, 44 ft. x 35 ft.; baggage room, 44 ft. x 65 ft.; express room, 24 ft. x 44 ft., and ticket office and toilet rooms. The waiting rooms and offices will be finished with white enamel brick wainscoting, art marble floors, plastered beam ceilings and antique oak woodwork. The building will be fitted with steam heat and electric light.

JASPER, ALA.—The Northern Alabama, the Illinois Central and the Frisco system will build a union station.

LINCOLN, NEB.—Plans for a union depot are being considered by the five roads entering the city. At a meeting of railway officers and prominent citizens a committee was appointed to take the matter up in detail. The interested roads are the Chicago, Burlington & Quincy, the Union Pacific, the Missouri Pacific, the Chicago & North Western and the Chicago, Rock Island & Pacific.

SEATTLE, WASH.—Contract is said to have been given to the Thompson-Starrett Co., of New York, by the Harriman lines for the new passenger station and terminal to be used by the Oregon & Washington. The contract is said to be worth about \$450,000. The building is to be 147 ft. by 187 ft., of reinforced concrete with brick and stone trimmings. (Sept. 10, p. 481.)

SALT LAKE, UTAH.—Work on the new power station for the Salt Lake & Ogden will be started soon. The building and machinery will cost about \$200,000. Sub-stations, to cost \$25,000 each, are to be put up at four other points on the line. Most of the work is finished in connection with the electrification from Salt Lake City north to Ogden, 35½ miles.

SUPERIOR, WIS.—The Great Northern has let the contract to Schmidt Bros. & Hill for the rebuilding of one ore dock. The machinery is to be changed to electric drive and control.

TOPEKA, KAN.—The Atchison, Topeka & Santa Fe has secured a site for its proposed shop office building. According to local press reports the building is to be 120 ft. x 70 ft., four stories high, built of brick and cement blocks, and will cost about \$100,000.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The Mexican Railway has ordered four consolidation locomotives.

The Kansas City Belt has ordered six switch engines from the Baldwin Locomotive Works.

The Missouri, Kansas & Texas is said to be figuring on locomotives. This is not yet confirmed.

The Detroit, Toledo & Ironton is having 11 locomotives repaired by the American Locomotive Co.

The Chicago & Alton has ordered three Mallet compounds (2-6-6-2) from the American Locomotive Co.

The Erie, as mentioned in the Railroad Age Gazette of October 15, has ordered from the Baldwin Locomotive Works 50 consolidation locomotives, for January delivery.

General Dimensions.

Weight on drivers	176,400 lbs.
Total weight	200,700 "
Diameter of cylinders	22 in.
Stroke of piston	32 "
Diameter of drivers	62 "
Type of boiler	Straight
Working steam pressure	200 lbs.
Heating surface, tubes	2,950 sq. ft.
" firebox	174 "
" total	3,124 "
Tubes, number	354
" outside diameter	2 in.
" length	16 ft.
Firebox, length, inside	104 1/4 in.
" width, inside	75 in.
" material	Open-hearth steel
Grate area	54 sq. ft.
Tank capacity for water	7,000 gals.
Coal capacity	14 tons

Special Equipment.

Axles	Erie specification
Boiler lagging	" "
Brake-beams	" "
Couplers	Steel
Driving boxes	Steel
Tires	Erie specification
Tubes	" "
Valve gear	Stephenson
Wheel centers	Steel

The New York, Ontario & Western has ordered three locomotives from the American Locomotive Co., as mentioned in the Railroad Age Gazette of October 15.

General Dimensions.

Weight on drivers	75 tons
Total weight	75 tons
Cylinders	20 1/2 in. x 26 in.
Diameter of drivers	51 in. over tire
Type of boiler	Wide firebox, straight top
Working steam pressure	180 lbs.
Heating surface, tubes	1,710 sq. ft.
" firebox	140 "
" total	1,850 "
Tubes, number	274
" outside diameter	2 in.
" length	143 1/4 "
Firebox, type	Wide
" length	112 1/4 in.
" width	90 1/4 "
" material and maker	Carbon acid steel
Grate area	68 sq. ft.
Tank capacity for water	4,500 gals.
Coal capacity	6 1/2 tons

Special Equipment.

Axles	Open-hearth steel
Bell ringer	Sanson
Boiler lagging	Sectional magnesite
Brakes	Westinghouse-American
Brake-beams	I-beam section
Brake-shoes	Am. Brake-Shoe Co., Perfecto
Brick arch	No
Couplers	Gould (front), Simplex (rear)
Driving boxes	Cast steel
Headlight	Dressel 16-in.
Injector	Sellers, Hancock, Simplex
Journal bearings	Cypress bronze
Piston and valve rod packing	King
Safety valve	Consolidated
Sanding devices	Hanlon
Sight-feed lubricators	Nathan triple
Springs	Railway Steel-Spring Co.
Steam gages	Ashcroft
Tires	Midvale
Tubes	Detroit seamless and spellerized
Valve gear	Stephenson link
Wheel centers	Cast steel

The Chicago Junction Railway has ordered four six-wheel switch engines from the American Locomotive Co.

The Atlanta, Birmingham & Atlantic has ordered six eight-wheel (4-4-0) locomotives from the Baldwin Locomotive Works.

The Pittsburgh & Lake Erie is said to be building 15 consolidation locomotives at its own shops. This is not yet confirmed.

The Baltimore & Ohio has ordered 50 consolidation locomotives from the American Locomotive Co., for delivery February 1.

The Lehigh Valley is negotiating with the Baldwin Locomotive Works for 10 ten-wheel locomotives and three six-wheel switchers.

The Chicago, Milwaukee & St. Paul has ordered 50 consolidation (Standard C-2) locomotives from the Baldwin Locomotive Works and 50 Pacific locomotives from the American Locomotive Co.

CAR BUILDING.

The Ann Arbor has ordered 300 box cars from the Standard Steel Car Co.

The Chesapeake & Ohio has ordered 300 cars from the Cambria Steel Co.

The Peoria Railway Terminal Co. is in the market for five interurban cars.

The Cuba Railroad has ordered 14 cars from the American Car & Foundry Co.

The Pittsburgh, Shawmut & Northern is in the market for 500 to 1,000 steel hopper cars.

The Aurora, Elgin & Chicago is in the market for five to ten city cars and one baggage car.

The DeKalb, Sycamore & Interurban Traction Co. is in the market for five interurban cars.

The Pennsylvania is said to be asking bids on 80 all-steel coaches. This is not yet confirmed.

The Muskogee Electric Traction Co. has ordered six pay-as-you-enter cars from the Danville Car Co.

The Baltimore & Ohio is in the market for 3,600 steel hopper cars and 1,000 steel underframe box cars.

The Lehigh Valley is said to have ordered 100 automobile cars from the Standard Steel Car Co. This is not yet confirmed.

The Berwind-White Coal Mining Co., Philadelphia, Pa., is said to have ordered 250 cars from the pressed Steel Car Co. This is not yet confirmed.

The Toledo & Ohio Central has ordered 500 thirty-ton steel underframe box cars from the Pullman Car Co. The Ralston Steel Car Co. will furnish the underframes.

The Atlanta, Birmingham & Atlantic has ordered from the American Car & Foundry Co. 25 of the 50 stock cars mentioned in the Railroad Age Gazette of October 8.

The New York, Ontario & Western has ordered from the Harlan & Hollingsworth Corporation the 10 passenger cars mentioned in the Railroad Age Gazette of October 1.

The Chicago, Milwaukee & St. Paul is now understood to be figuring on from 200 to 250 passenger cars, instead of 178, as mentioned in the Railroad Age Gazette of October 1.

The Denver, Northwestern & Pacific is said to have ordered from the Hicks Locomotive & Car Works the 100 gondola cars mentioned in the Railroad Age Gazette of October 8. This is not yet confirmed.

The New York Central Lines are said to have ordered 300 flat cars and 1,000 hopper cars from the Standard Steel Car Co., 2,400 hopper cars from the American Car & Foundry Co., and 2,000 hopper cars from the Pressed Steel Car Co.

The Chicago & Milwaukee Electric has ordered the equipment mentioned in the *Railroad Age Gazette* of October 1. The order was divided as follows: One double-truck snow sweeper, one double-truck express car, eight standard interurban car bodies and 12 sets of interurban car trucks from the McGuire-Cummings Manufacturing Co.; one standard cafe, parlor and dining car body, three first-class coach bodies and five standard interurban car bodies from the American Car Co., St. Louis, Mo., and five sets of coach trucks from the Baldwin Locomotive Works. All the cars will have Smith No. 2 heaters, Westinghouse automatic air-brakes and G. E. motors, type 73, with type M control.

The Norfolk & Western, as mentioned in the *Railroad Age Gazette* of October 22, has ordered 500 forty-ton stock cars from the American Car & Foundry Co., 500 fifty-ton hopper bottom gondolas and 500 forty-ton box cars from the Barney & Smith Car Co., and will build at its own shops, during 1910, 2,000 hopper bottom gondolas. The stock cars are for March, 1910, delivery, and will measure 35 ft. 11¼ in. long, 8 ft. 3¼ in. wide and 8 ft. high, inside, and 39 ft. 8½ in. long, 9 ft. 6½ in. wide and 13 ft. 1½ in. high, over all. The hopper bottom gondolas are for January, 1910, delivery and will measure 30 ft. ½ in. long, 9 ft. 2 in. wide and 8 ft. 5½ in. high, inside, and 33 ft. ¾ in. long, 9 ft. 9¼ in. wide and 10 ft. 4½ in. high, over all. The box cars are for January, 1910, delivery, and will measure 36 ft. long, 8 ft. 6 in. wide and 8 ft. high, inside, and 39 ft. 8½ in. long, 9 ft. 11¼ in. wide and 13 ft. 1 in. high, over all. The box and stock cars have bodies of wood and underframes of steel and the hopper bottom gondolas are all-steel. The special equipment for all cars includes:

Axles	Steel
Bolsters, body	Plates and angles
Bolsters, truck	Cast steel
Brakes	Westinghouse
Brake-beams	N. & W. standard deck beam
Brake-shoes	Cast iron
Brasses	Plastic bronze
Center bearings	Cast steel (gondolas)
Draft gear	Sessions-Farlow
Paint	Patterson-Sargent method
Roofs	Chicago (box)
Side bearings	Cast iron
Springs	Union Spring Mfg. Co.
Wheels	Rolled steel (gondola)
Wheels	Cast iron (box and stock)

The Virginian Railway, as reported in the *Railroad Age Gazette* of October 15, has ordered eight coaches and six baggage cars from the Harlan & Hollingsworth Corporation. These cars will measure 60 ft. 4½ in. long, 8 ft. 10½ in. wide and 9 ft. 5½ in. high, inside, and 61 ft. long, 10 ft. ½ in. wide and 14 ft. 2¾ in. high, over all. Bodies will be of wood and underframes of wood reinforced with steel. The special equipment includes:

Axles	M. C. B. steel
Bolsters, body	Wrought iron, built-up
Bolsters, truck	Flitched
Brakes	Westinghouse high-speed
Brake-beams	Diamond special
Brake-shoes	Streeter
Brasses	M. C. B.
Couplers	Tower
Curtain fixtures	National (coach)
Curtain material	Silk-faced Pantasote (coach)
Draft gear	Westinghouse friction
Dust guards	Wood
Heating system	Direct steam (coach)
Journal boxes	Symington
Lighting system	Pintsch gas (coach), oil (baggage)
Platforms	Standard steel (coach)
Roofs	Canvas
Seat covering	Pantasote (coach)
Springs	Railway Steel-Spring Co.
Trucks	Four-wheel
Ventilators	Garland and drop sash (coach)
Vestibules	Wide (coach)
Vestibule diagram	Canvas riveted (coach)
Vestibule trap doors	Steel (coach)
Wheels	Solid steel
Window fixtures	Dayton (coach)

The Lehigh Valley has ordered 150 refrigerator cars of 50,000 lbs. capacity and 750 fifty-ton drop-end gondolas from the Standard Steel Car Co., and 250 similar gondolas from the Cambria Steel Co., as mentioned in the *Railroad Age Gazette* of October 8. The refrigerator cars will measure 36 ft. long, 8 ft. 4½ in. wide and 7 ft. 5¼ in. high, inside, and 37 ft. 4¾ in. long, 9 ft. 9 in. wide and 13 ft. 7 in. high, over all. The gondolas will weigh 43,000 lbs. and will measure 40 ft. ¼ in. long, 9 ft. 4 in. wide and 3 ft. high, inside, and 41 ft. 5½ in. long, 9 ft. 11 in. wide and 7 ft. ½ in. high, over

all. The refrigerator cars will have wood bodies and steel underframes, and the gondolas will have steel bodies with wood floors and steel underframes.

MACHINERY AND TOOLS.

The Norfolk & Western has issued a small list of tools, including lathes, shapers, planers and presses.

The Hicks Locomotive & Car Works, Chicago, is in the market for 10 shop tools for the Chicago Heights plant.

The Chicago & North Western has ordered 25 fans from the American Blower Co., Detroit, Mich., for its Chicago station.

The Wheeling & Lake Erie is taking prices on 36 machine tools for its locomotive and car repair shops at Brewster, Ohio.

The Pennsylvania Tunnel & Terminal Co. has ordered 14 fans from the American Blower Co., Detroit, Mich., for ventilating its subways.

The Tindel-Morris Co., Eddystone, Pa., has received orders for Tindel saw blades from the Pennsylvania Lines West and the Canadian Northern.

The Pilliod Company, Swanton, Ohio, is erecting, at Swanton, an additional factory 180 ft. x 50 ft., and has bought about \$20,000 worth of new machinery for this addition. It expects to have the new factory in operation by December 1, at which time it will be able to turn out five Baker-Pilliod locomotive valve gears per day.

IRON AND STEEL.

The New York Central is in the market for 25,000 kegs of spikes.

The Chesapeake & Ohio is in the market for 5,000 kegs of spikes.

The Antioquia Railway, Medellin, Columbia, is figuring on 1,000 tons of rails.

The Minneapolis, St. Paul & Sault Ste. Marie has ordered 14,000 tons of rails.

The Lehigh Valley is in the market for 10,000 tons of rails for 1910 delivery.

The Philadelphia & Reading is in the market for 10,000 tons of rails for 1910 delivery.

The New York Central Lines are figuring on about 250,000 tons of rails for 1910 requirements. The board of directors has authorized the purchase of part of this.

General Conditions in Steel.—It is said that the present orders for steel rails amount to over 3,000,000 tons. Contracts for about 350,000 tons of rail are now under negotiation. Orders for semi-finished and finished steel taken by the United States Steel Corporation during the first half of this month were about 84,000 tons. Pig iron, old material and ore is active, and there has been a great demand for foreign iron. The bookings of the Steel Corporation for the month of October will exceed 1,500,000 tons. Orders have been coming in at a rate 500,000 tons a month in excess of production.

SIGNALING.

The signal department of the New York Central is now actively at work in the erection of automatic signals, to take the place of the controlled manual system, on the main line between Albany and Buffalo; and the change is to be carried out on all parts of the main line within a year or two. About 50 miles of the main line is equipped with automatic signals already.

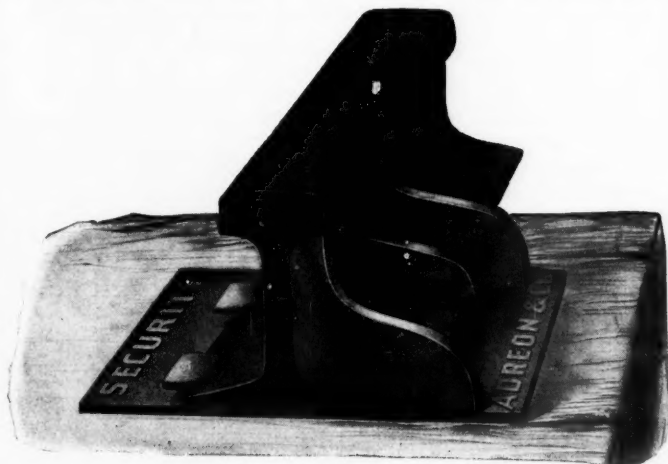
Plate Glass.

Sheet glass, formerly used almost exclusively, and largely even to-day in the less modern car equipment, is unsightly, from an external view, and uncomfortable for the passengers. The very nature of manufacture precludes the possibility of

its being anything else. Being blown in cylindrical form, it does not have the clearness or surface which is given to plate glass.

Security Rail Brace and Tie Plate.

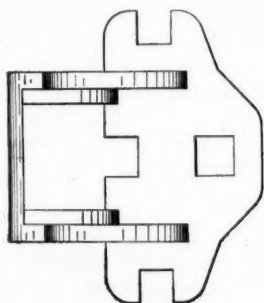
The accompanying illustrations show several forms of the Security rail brace and tie-plate. It is a single malleable iron casting. As the illustrations show, the brace proper consists of two vertical members, fitting accurately with the head, web and base of the rail, connected by a longitudinal member which lies against the web. It is reinforced by additional



Rail Brace and Tie Plate, Style A.

metal at the junction of the rail brace with the plate and along the portion of the rail brace which fits on the upper side of the flange of the rail.

Three adaptations are shown. Style A is a combination rail brace and tie-plate. It is designed to firmly hold the rail to gage by providing a substantial brace at the head, web and flange of the rail. It is also claimed to be advantageous in preventing rail creeping. Having plenty of clearance, it can be used inside of the rail as well as outside without interference with the wheel flanges. The style B brace consists of the brace without the tie-plate. It has an extended



Rail Brace, Style B, Plan View.

base with broad bearing on the tie and can be spiked at four points if desired. The style S rail brace and slide plate is designed to insure a substantial brace for the main rail, the switch point sliding on a riser, the shoulder of which keeps the main rail to gage. The style D guard rail brace and plate, not shown herewith, is a combination of the brace with a wide plate providing for the guard rail, permitting the main rail, the guard rail, the spacing block and the brace to be bolted together with one set of track bolts. The spacing block is made of hollow malleable iron, which, it is claimed, is cheaper than cast iron and will not crack. Ribs or flanges can be cast on the bottom of the plate as desired.

The Security rail brace is in use on the Mobile & Ohio, the St. Louis Southwestern, the Terminal Railroad of St. Louis, the Wabash and other roads. All of those mentioned have given repeat orders for the device. It is made by the Adreon Manufacturing Co., St. Louis, Mo. John Berlien, 2740 Chipewa street, St. Louis, is the patentee.

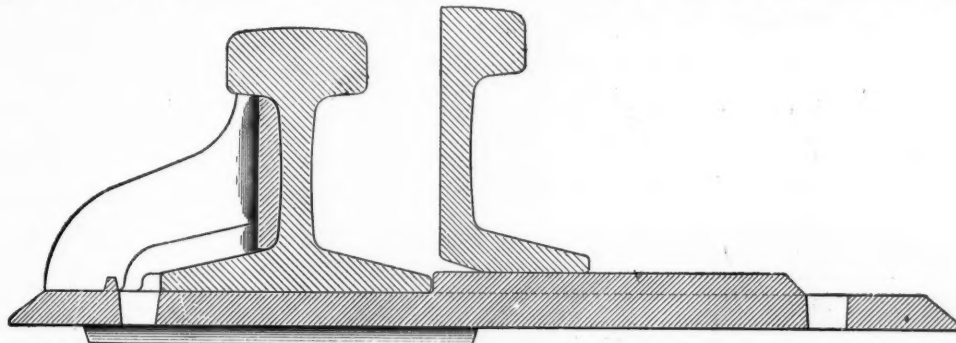
Telephone Train Despatching on the Seaboard Air Line.

The Seaboard Air Line has installed a telephone train despatching circuit between Raleigh, N. C., and Monroe, 148 miles. The despatcher's office is at Hamlet, 53 miles from Monroe and 95 miles from Raleigh. Between Raleigh and Hamlet there are 19 selector stations and two siding telephones. Between Hamlet and Monroe there are 10 selector stations. The line is of No. 9 B. & S. gage hard drawn copper wire, 210 lbs. to the mile. Twenty-inch soft copper tie wires are used and all joints are made by means of copper sleeves. The wires are transposed regularly every ¼-mile. Where the line is carried on cross-arms the transpositions are made by means of the Pierce drop bracket, the idea being that in case of a broken insulator there will always be the cross-arm between the two wires. Where the line is carried on brackets the transposition is accomplished by raising the brackets on one side and lowering them on the other for a distance of two poles, which provides ample clearance for the transposition.

The apparatus was furnished by the Western Electric Co., Gill main line bridging selectors being used. The key for closing the despatcher's transmitter battery circuit is so arranged that the circuit may be held closed while talking only, or locked closed, as desired. Portable storage batteries of four volts and 60 ampere hour capacity are used for the despatcher's transmission battery. The chief despatcher's desk is provided with a standard desk stand telephone, which gives good transmitting and receiving, yet does not interfere with the sending or receiving of the regular despatcher.

A repeating coil is introduced into the line at the despatcher's office, which separates the line into two portions, allowing signaling on either and independent of the other. At the way stations the telephone equipment consists of the "Flexiphone" transmitter arm, a switch hook for use with the leather head band receiver, induction coil, condenser, etc. A small push button key is provided, which, in its normal position, maintains the circuit for listening. When the operator desires to talk, the key is pressed. This key is necessary in order to give the best possible transmitting and receiving especially where a large number of stations may have receivers in circuit simultaneously.

The Gill selectors at the way stations are wound to 4,500 ohms. The resistance, in series with the selector winding, is of a high value near the despatcher's station, gradually



Rail Brace and Slide Plate, Style S.

decreasing at successive stations, so that the last station on the line has none. This resistance is used to compensate for the line resistance and line drop in potential, the result being that all selectors receive the same quantity of current, about 8 milliamperes. O'Connell protectors are used, and no fuses, as the line is not liable to cross with any high tension circuit.

The "blind" sidings have wall telephones in weather-proof boxes. These boxes have a line switch so arranged that the switch must be opened before the door can be closed. No ringers are provided as it will not be necessary to ring these stations, and hand generators are omitted since the despatcher is on the line at all times.

Two portable telephones are furnished for use on wrecking cars. An 18-foot line pole is furnished with each portable set, this being in three sections of 6-feet each.

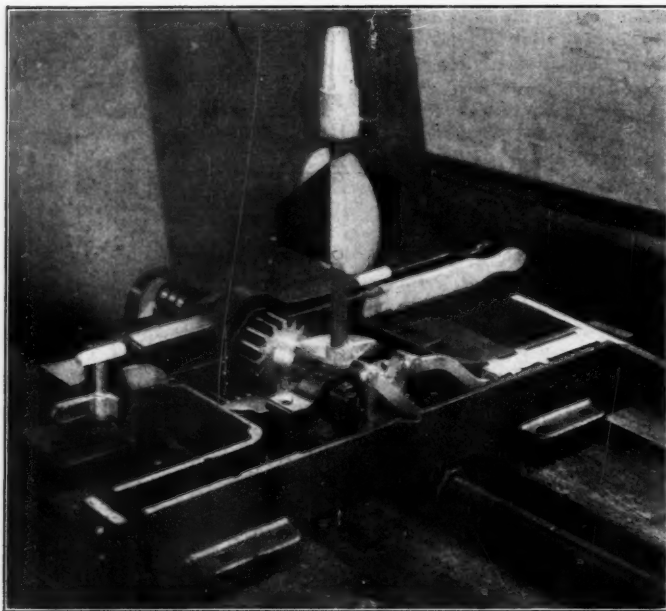
At intervals of about 25 miles—at Wadesboro, Sanford and Aberdeen, there are test switches. This section of the road

is worked by the block system, and between Monroe and Hamlet, with ten intervening stations, there is in service a special composite telephone circuit for use in blocking. This circuit is a modification of the Western Electric Co.'s railway composite telephone. Between Hamlet and Norlina, 154 miles, 36 stations, a magnetic telephone block system is used, operating on a grounded block wire.

We are informed that the dispatchers and operators have adapted themselves readily to the new method. They handle the work with greater ease and despatch than by the telegraph, and the officers of the road are well pleased.

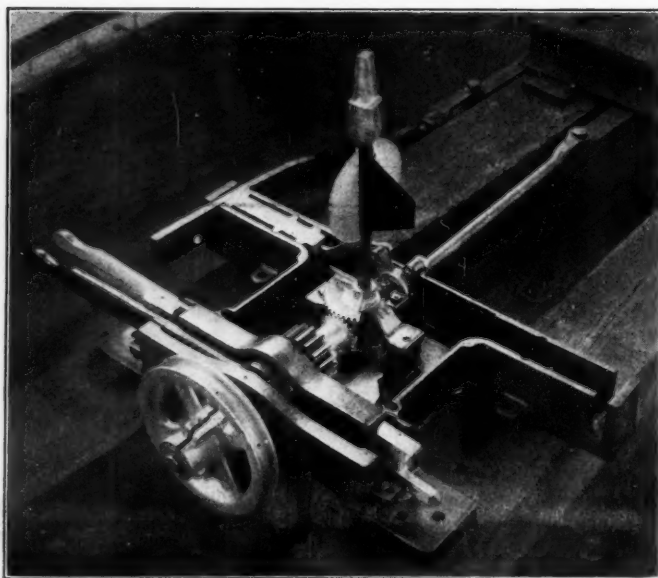
Double Lock Switch Stand.

The accompanying photographs show a switch stand made by the W. F. Bossert Manufacturing Co., Utica, N. Y. It is designed to accomplish the same purpose at a single switch that an interlocking plant does at a group of switches. It locks the switch points with the facing point lock in both



Stand, Uncovered, Showing Connection to Switch.

positions, and the points must be tight against the stock rail before the operating lever can make its full movement. The operating lever lies parallel to the lock and moves through 180 deg. to unlock the points, throw the switch and relock the points. It will not operate unless the movement of the switch points corresponds to the movement of the lever. It has a

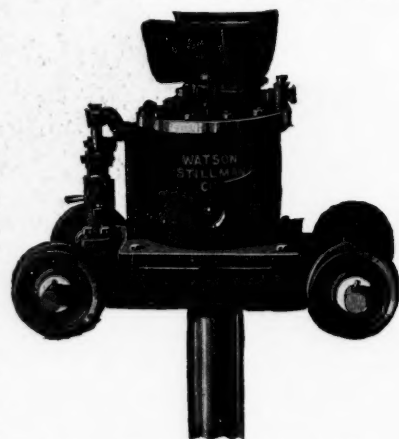


Stand, Uncovered, with Chain Wheel Attached.

lever attachment to operate either a mechanical or power-operated signal. There is an absolute lever lock between the switch and the signal lever, so arranged that the signal lever must be in the full lock position before the switch lever can be moved. After the switch lever movement has been started the signal lever cannot again be cleared until the switch lever has been returned to its normal position and the switch points locked. There is a circuit controller, dust and water-proof, attached to the signal lever, taking the place of a switch circuit controller worked from the movement of the switch points. The stand can be applied to a right-hand or left-hand switch, or can be installed to operate movable point frogs.

Hydro-Pneumatic Pit Jack.

Several years ago the Watson-Stillman Co., New York, introduced a new design of 15- and 30-ton pit jacks, in which air pressure was utilized to accelerate the work of the jack. The favor with which this new operating principle was received has caused the Watson-Stillman Co. to bring out a larger size of the hydro-pneumatic pit jack to meet the increasing weight of modern rolling stock. The capacity of the new size is 45 tons. The one illustrated, which was built for the St. Louis & Southwestern, runs on a 24-in. track, has a 4 1/4-in. ram with 54-in. stroke, has a clearance of 5 1/2 in. from the rail to bottom of saddle, has a height of 2 ft. 10 in. from rail to top of saddle when down, and extends down into the pit 3 ft., 7 3/4 in. from the top of the rail.



Hydro-Pneumatic Pit Jack.

The hydro-pneumatic operating system gives this jack the quick movement of a pneumatic tool in moving the ram up to its work and thus effects a considerable time-saving. After the jack has been placed in position, air pressure from the shop system is admitted on top of the liquid in the cistern, thus forcing the water rapidly through the pump until the ram comes to a bearing under the load. A few strokes of the hydraulic pump will then raise the wheels sufficiently to remove the sections of track. The saddle is lowered in the usual way by the valve-stem key.

Pittsburgh Steel Tie.

The accompanying illustration shows a cast steel tie made by the Pittsburgh Track Specialty Co., a subsidiary of the Pittsburgh Equipment Co., Pittsburgh, Pa. The tie can be made in any shape, and either non-insulated or insulated. The form shown is insulated, and has been in service on the



Pittsburgh Cast Steel Tie.

main line of the Pittsburgh & Lake Erie for six months without the insulation being affected. A particular advantage is claimed to lie in its use on sharp curves, because it holds the track securely. A form of the tie is made for girder rails for use on paved streets. Its wide base makes a solid support for the rail, which is firmly keyed into place.

ANNUAL REPORTS

UNION PACIFIC RAILROAD COMPANY—TWELFTH ANNUAL REPORT.

REPORT OF THE BOARD OF DIRECTORS.
INCOME FOR THE YEAR.

The gross revenues and expenses of the Union Pacific Railroad and Auxiliary Companies, after excluding all offsetting accounts between them, were as follows:

	1909.	1908.	+ Increase. — Decrease.
Average miles of rail- way operated during the year	6,062.13	5,781.41	+ 280.72
TRANSPORTATION OPERATIONS.			
Gross operating revenues.....	\$77,360,429.36	\$74,422,776.81	+ \$2,937,652.55
Outside operations—rev- enues	1,390,032.19	1,616,448.10	— 226,415.91
Total revenue	\$78,750,461.55	\$76,039,224.91	+ \$2,711,236.64
Operating expenses	\$36,503,075.95	\$40,177,515.62	— \$3,674,439.67
Outside operations—ex- penses	1,442,009.61	1,516,519.67	— 74,510.06
Taxes (rail lines and property dealt with as outside operations.)...	2,570,561.89	2,444,725.87	+ 125,836.02
Total expenses and taxes	\$40,515,647.45	\$44,138,761.16	— \$3,623,113.71
Revenue over ex- penses and taxes.....	\$38,234,814.10	\$31,900,463.75	+ \$6,334,350.35
Fixed Charges.			
Interest on funded debt outstanding in the hands of the public..	\$13,331,368.07	\$11,245,899.39	+ \$2,085,468.68
Sinking fund, Utah & Northern Ry. Co. Con- solidated Mortgage....	12,013.33	12,013.33	.....
Hire of equipment—bal- ance	1,389,483.26	1,487,123.40	— 97,640.14
Total	\$14,732,864.66	\$12,745,036.12	+ \$1,987,828.54
Less—Rentals for lease of road, for joint tracks, yards and other facilities, viz.: Collec- tions	\$734,551.13		
Pay- ments	374,492.74		
	360,058.39	544,280.59	— 184,222.20
	\$14,372,806.27	\$12,200,755.53	+ \$2,172,050.74
Surplus after pay- ment of fixed charges	\$23,862,007.83	\$19,699,708.22	+ \$4,162,299.61
Application of Surplus.			
Dividends on stocks of Union Pacific Rail- road Co.: 4 per cent. on pre- ferred stock	\$3,981,760.00	\$3,981,764.00	— \$4.00
6 per cent. on com- mon stock	11,806,996.33	11,729,274.00	+ 77,722.33
Dividends on stocks of the Oregon Railroad & Navigation Co. in the hands of the public: 4 per cent. on pre- ferred stock.....	64.00	94.00	— 30.00
	\$15,788,820.33	\$15,711,132.00	+ \$77,688.33
Surplus after pay- ment of dividends...	\$8,073,187.50	3,988,576.22	+ \$4,084,611.28
INCOME OTHER THAN FROM TRANSPORTA- TION OPERATIONS.			
Interest on bonds owned of companies other than Oregon Short Line Railroad and Oregon Railroad & Navigation Cos.	\$1,119,155.80	\$1,143,063.81	— \$23,908.01
Dividends on stocks owned of companies other than Oregon Short Line Railroad and Oregon Railroad & Navigation Cos.	14,711,806.72	15,370,873.50	— 659,066.78
Balance of interest on loans and on open ac- counts other than with Auxiliary Companies..	1,556,659.64		+ 1,556,659.64
Rentals from steamships.	304,800.00	249,131.60	+ 55,668.40
Net income from lease of unpledged lands and town lots	2,576.40	505.70	+ 2,070.70
Miscellaneous receipts...	59,761.52		+ 59,761.52
Total	\$17,754,760.08	\$16,763,574.61	+ \$991,185.47

Less—Balance of interest on loans and on open accounts other than with Auxiliary Com- panies		\$540,225.73	—	\$540,225.73
Miscellaneous payments.	\$18,366.65	203,657.33	—	185,290.68
	<u>\$18,366.65</u>	<u>\$743,883.06</u>	—	<u>\$725,516.41</u>

Total income other than from transportation operations	\$17,736,393.43	\$16,019,691.55	+	\$1,716,701.88
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Deductions:				
Dividends on stock of Union Pacific Railroad Co.: 4 per cent. on common stock	7,871,330.89	7,819,516.00	+	51,814.89

Surplus income other than from transportation operations	\$9,865,062.54	\$8,200,175.55	+	\$1,664,886.99
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Total surplus from transportation operations and from other income after payment of dividends	\$17,938,250.04	\$12,188,751.77	+	\$5,749,498.27
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The expenditures for "Betterments" (enlargements or improvements of the existing roadway, structures, equipment, or other facilities) amounted to \$1,652,817.58; and the expenditures for "Additions" (additional roadway, structures, equipment, or other facilities not taking the place of anything previously existing) amounted to \$3,208,946.45, a total of \$4,861,764.03, which was charged to Capital Account.

The results of the year's operations, compared with those of the preceding year, were as follows:

	Increase.	Decrease.	Per Cent.
Average miles of railway operated..	280.72		4.86
Gross operating revenues and revenues from outside operations....	\$2,711,236.64		3.57
Operating expenses and expenses of outside operations		\$3,748,949.73	8.99
Taxes	125,836.02		5.15
Revenue over expenses and taxes....	6,334,350.35		19.86
Income other than from transportation operations	1,716,701.88		10.72
Total surplus	8,051,052.23		16.80
Fixed charges	2,172,050.74		17.80
Surplus over fixed charges.....	5,879,001.49		16.46

ASSETS AND LIABILITIES.

The assets and liabilities of the Union Pacific Railroad and Auxiliary Companies are shown in detail in Table No. 5. The securities of the Auxiliary Companies owned by the Union Pacific Railroad Co. and of the proprietary railways which are operated as an integral part of the system and owned by the Union Pacific Railroad and Auxiliary Companies, as well as all offsetting accounts between the companies, are eliminated, thus dealing only with the securities in the hands of the public, the assets collectible from the public, and the liabilities payable to the public.

The increase or decrease in assets and liabilities since last report, briefly stated, is as follows:

Increase in Assets:		
Cost of railways, equipment, and appurtenances as shown in detail under "Capital Expenditures"....	\$7,226,154.39	
Cash	\$22,594,516.16	
Demand loans and time deposits.....	18,800,000.00	41,394,516.16
Loans to San Pedro, Los Angeles & Salt Lake R. R. Co.	474,063.36	
Loans to Utah Light & Railway Co....	2,362,440.10	2,836,503.46
Expenditures for the construction of new lines and for terminal properties	8,202,871.62	
Rolling stock	2,388,226.09	10,591,097.71
Due from Proprietary Companies.....		670,940.10
Unadjusted accounts		93,925.04
Total		\$62,813,136.86
Deduction—		
Demand loans Southern Pacific Co....	\$45,376,389.27	
Stocks and bonds owned; proceeds from sale of stocks and bonds after deducting cost of stocks and bonds acquired during the year, as shown in Tables Nos. 9, 10 and 11.....	8,198,715.38	
Current cash accounts.....	1,261,766.04	
Material, fuel, and supplies.....	1,148,984.60	55,985,855.29
Net increase in assets.....		\$6,827,281.57
Decrease in Liabilities:		
Loans paid off.....	\$41,189,645.90	
Due to Proprietary Companies.....	210,900.00	
		\$41,400,545.90

Deduction—

Increase in capital stock.....	\$3,814,300.00
Increase in funded debt.....	24,676,732.06
Current cash accounts.....	332,465.98
Reserve for depreciation of steamships and equipment	375,119.54
	<u>29,198,617.58</u>
	12,201,928.32

Increase in assets in excess of increase in liabilities
(gain in Profit and Loss)..... \$19,029,209.89

The Oregon Short Line Railroad Company owning \$124,200,000, par value, Common and Preferred Capital Stock of the Southern Pacific Company, exercised the privilege to subscribe at 96 per cent. for \$37,260,000 Four Per Cent. Twenty-Year Convertible Gold Bonds of the Southern Pacific Company. Subscription receipts for bonds, when issuable, to the amount of \$32,500,000, face value, were sold at prices averaging \$984.08 per bond.

Since the close of the fiscal year, the remaining shares of Great Northern Iron Ore Properties have been sold, and \$2,933,334.18 realized from the sales. With the exception of 7,249 shares (par value \$100 each) of Northern Securities Company "Stubs," the company has sold all the stock of the Northern Securities Company, of the Great Northern Railway Company, and of the Northern Pacific Railway Company, received in the distribution of the assets of the Northern Securities Company, and the stocks subsequently acquired by subscription rights. The sum realized from these sales amounted to \$417,377,341.62.

The following statement shows the transactions growing out of the original investment in the 824,918.71 shares of the capital stock of the Northern Securities Company and the reinvestment of the proceeds received from the sale of the respective stocks:

STOCKS ACQUIRED.			STOCKS SOLD.		STOCKS ON HAND, UNSOLD, JUNE 30, 1909.		
Company.	Shares.	Cost.	Shares.	Amt. realized.	Shares.	Cost.	Av'ge cost per share.
Northern Securities Co. (a).....	824,819.71	\$79,459,691.36	100,000.18	\$16,880,019.46	.....	.....	.....
Great Northern Ry. Preferred.....	73,589.60	7,358,960.00	290,709.89	65,541,736.66	.....	.....	.....
Great Northern Ry. Sub-Receipts.....	2,600	281,837.50	2,000.60	255,940.98	.....	.....	.....
Great Northern Iron Ore Properties.....	90,364	(b)	51,500	3,725,342.80	38,864	(b)	.....
Northern Pacific Ry. ....	.....	.....	281,828.82	54,986,401.91	.....	.....	.....
Northern Pacific Ry. Sub. Receipts.....	34,516	2,290,912.50	34,516	3,054,509.50	.....	.....	.....
(50, 62½ and 75 per cent paid)	.....	.....	.....	.....	.....	.....	.....
Northern Securities Co. "Stubs".....	.....	.....	.1871	56.13	7,249	(b)	.....
Total Northern Securities investment.....	.....	\$89,391,401.36	.....	\$144,444,007.44	.....	.....	.....
Atchison, Topeka & Santa Fe pfd.....	100,000	\$10,395,000.00	.....	.....	100,000	\$10,395,000.00	103.95
Baltimore & Ohio Preferred.....	72,064	6,665,920.00	.....	.....	72,064	6,665,920.00	92.50
Baltimore & Ohio Common.....	323,342	38,801,040.00	.....	.....	323,342	38,801,040.00	120.00
Chicago, Milwaukee & St. Paul Pfd.....	18,450	1,845,000.00	.....	.....	18,450	1,845,000.00	100.00
Chicago, Milwaukee & St. Paul Common.....	72,800	9,765,187.74	72,800	\$9,982,186.63	.....	.....	.....
Chicago & Northwestern Ry. Com.....	32,150	5,946,673.94	.....	.....	32,150	5,946,673.94	184.97
Chicago & Alton R.R. Preferred.....	103,431	8,946,781.50	.....	.....	103,431	8,946,781.50	86.50
Illinois Central R. R.....	231,415.65	37,692,256.21	6,415.65	948,805.73	225,000	36,743,450.48	163.30
New York Central & H. R. R. R.....	142,857	19,634,279.93	.....	.....	142,857	19,634,279.93	137.44
Railroad Securities Preferred.....	19,359	1,956,184.26	.....	.....	19,359	1,956,184.26	101.05
Railroad Securities Common.....	34,829	4,797,687.62	.....	.....	34,829	4,979,687.62	142.98
Total Northern Securities reinvestment.....	.....	\$146,628,011.20	.....	\$10,930,992.36	.....	\$135,914,017.73	.....
Total.....	.....	\$236,019,412.56	.....	\$155,374,999.80	.....	\$135,914,017.73	.....

(a) For 724,918.71 shares of Northern Securities Co. stock, there were received in exchange 216,520.8949 shares of Great Northern Ry. Co. stock, 281,828.8215 shares of Northern Pacific Ry. Co. stock, and 7,249.871 shares of Northern Securities Co. Stubs.

(b) Included in the \$79,459,691.36, original cost of Northern Securities Co. stock.

In Table No. 5 the proceeds from the sales of the above stocks are treated as a credit against the cost of stocks and bonds.

The stocks and bonds owned, other than stocks and bonds of the Union Pacific Railroad and Auxiliary Companies, stand charged at the close of the year with \$209,974,387.06. This charge includes not merely the above stocks and bonds, but also the other stocks and bonds, shown in detail in Tables Nos. 9, 10, and 11.

Of the stocks and bonds of the Union Pacific Railroad and Auxiliary Companies the Companies own bonds, unpledged, to the amount of \$84,976,000.00 face value.

CAPITAL EXPENDITURES.

The charges to capital account, other than for stocks and bonds in companies other than the Union Pacific Railroad and Auxiliary Companies, were as follows:

Expenditures for account of construction of railways taken over into cost of railways, equipment, and appur- tenances	\$150,027.63
Cost of railways purchased in excess of amount included in previous reports under cost of railways, equipment and appurtenances, viz.:	
South Omaha & Western Railroad....	\$2,156,073.44
Less credits:	
Leavenworth, Kansas & Western Railway	\$8,787.04
Topeka & Northwestern Railroad.....	1.00
	<u>\$8,788.04</u>
	2,147,285.40

Expenditures for account of extensions and cost of exten-
sions transferred from deferred assets, viz.:

Union Pacific Railroad Company:	
Grant Mine to La Salle, Colorado.....	\$1,466.20
Greeley, Colorado, eastward.....	156,704.81
Onaga to Marysville, Kansas.....	12,495.37
O'Fallons to Northport, Nebraska.....	384,476.15
Rock Springs to Coal Fields, Wyoming.....	352.00
Sand Creek to St. Vrain, Colorado....	224,110.43

Oregon Short Line Railroad Company:	\$779,604.96
Kemmerer to North Kemmerer, Wyoming	5,479.94
Oregon Railroad & Navigation Company:	
Elgin to Joseph, Oregon	\$655,834.32
St. John's to Troutdale, Oregon.....	2,722.13
Less credit:	
St. John's Extension, Oregon....	362.38
	<u>658,194.07</u>

1,443,278.97

Railway, Track and Appurtenances.

Ballast	\$24,069.72
Bridges, trestles, culverts, and grade crossings	260,440.66
Changes in line, revision of grades, and widening embankments	786,412.06
Interlocking, block, and highway crossing signals	178,866.23
Main tracks	1,932,938.42
Real estate, right-of-way and grounds, and fencing right-of-way.....	204,759.76
Sidings and passing tracks.....	246,335.05
Telegraph and telephone lines.....	82,467.46
	<u>\$3,716,289.36</u>

Buildings, Structures, and Appurtenances.

Engine houses, shops, machinery, tools, and appurtenances	\$304,476.65
Roadway buildings, machinery, tools, and appurtenances	79,508.73

Station buildings, terminal yards, and appurtenances	729,519.82
Water stations and water supply.....	31,969.47
	<u>1,145,474.67</u>
	4,861,764.03

Equipments transferred from deferred as-
sets, viz.:

37 passenger train cars.....	\$381,216.14
484 freight train cars	497,021.10
20 road service cars.....	53,546.59
Cost of equipment charged to replacement accounts in excess of the amounts to the credit of the several replacement accounts	48,978.21
Additional charges on equipment trans- ferred in preceding year.....	7,311.94
	<u>988,073.98</u>

Improvements to Northern Pacific Terminal property and Pintsch Gas Plant, Portland, Oregon.....	12,414.83
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Total charges

Credits:

Amount received from the Trustee of the Union Pacific Railroad Company's First Railroad and Land Grant Mortgage, in payment for expenditures for better- ments, improvements, equipment, etc., not otherwise provided for.....	\$2,030,000.00
Adjustment in amount deducted from cost of railways, equipment, and appurte- nances on account of the difference be- tween the face value of stocks and	

bonds of auxiliary companies, and the prices at which they were taken over...	247,794.83
Adjustment in accounts taken over under reorganization	98,895.62
	2,376,690.45
Net expenditures for capital account.....	\$7,226,154.39

EQUIPMENT.

The changes in the equipment during the year were as follows:

	Condemned, destroyed, sold	Re- ferred and place- credited to ment	Added and Charged to	Capital Ac- counts.	Free Assets.	Union Pacific Equipm't Ass'n.	Total.
Locomotives	6	6					6
Baggage cars	2	1	3				7
Baggage & mail cars.	2						3
Bag. and pass'gr cars	3						
Bag., mail & pass. cars		2					2
Business cars	2	2			*1		1
Chair cars	1						
Composite cars	1						
Dining cars	1	3				6	10
Motor cars		8			*7		1
Passenger cars	7						
Postal cars	1	2					2
Box cars	649	65	459	50		1,498	1,963
Caboose cars	14	1				10	11
Flat cars	59	1				50	51
Furniture cars	139	50				50	50
Gondola cars	300	11				11	11
Do., drop bottom..	11	43			*45	*1	*3
Do., hopper bottom.	8	120					120
Refrigerator cars ..	49						
Stock cars	141	89			*40	100	149
Tank (oil)		20			*20		
Work equipment	178	307	7		*6		308

Amount credited or charged to Condemned, destroyed, sold or transferred and credited to replacement accounts, \$559,454.55.

Added and charged to: Replacement accounts, \$605,530.75; Capital account, \$747,565.79; Free assets, \$404,414.17; Union Pacific Equipment Association, \$1,900,828.87; Total, \$2,849,511.24.

†There is included in this amount the sum \$48,978.21, cost of equipment in excess of the amounts to the credit of the several replacement accounts. The classification of expenditures for Additions and Betterments as prescribed by the Interstate Commerce Commission, effective July 1, 1909, provides that equipment retired be credited and equipment acquired be charged directly to "Equipment," therefore, the aforementioned sum was in adjustment charged to "Equipment."

*Credit.

The locomotives added during the year averaged 104.00 tons total weight of engine without tender and 98.50 tons upon drivers. The freight train cars added during the year averaged 48.92 tons capacity. The locomotives and cars owned and their capacity at the close of the year were as follows:

	This Year.	Last Year.	In- crease.
Locomotives, standard gauge.....	1,087	1,087	
Locomotives, narrow gauge.....	1	1	
Total	1,088	1,088	
(Standard Gauge.)			
Total weight, excluding tender (tons)....	89,808	89,701	107
Average total weight, excluding tender (tons)...	82.54	82.52	.02
Total weight on drivers (tons).....	74,182	73,980	202
Average total weight on drivers (tons)....	68.18	68.06	.48
Passenger train cars, standard gauge.....	710	702	8
Passenger train cars, narrow gauge.....	1	1	
Total	711	703	8
Freight train cars, standard gauge.....	26,470	25,482	988
Freight train cars, narrow gauge.....	6	6	
Total	26,476	25,488	988
Total capacity of standard gauge cars (tons) 984,923		901,862	83,061
Average capacity of standard gauge cars (tons) 37.22		36.01	1.21
Work equipment	3,728	3,598	130

TRANSPORTATION OPERATIONS.

The results of the year's transportation operations compared with those of the preceding year are as follows:

	This Year.	Last Year.	Increase or Decrease.	Per Cent.
Average miles of railway operated..	6,062.13	5,781.41	280.72	4.86
REVENUES.				
Passenger, including extra baggage....	\$17,672,357.06	\$16,719,364.35	\$952,992.71	5.70
Mail and express....	4,354,717.19	3,883,883.48	470,833.71	12.12
Freight	54,000,195.46	52,885,212.92	1,114,982.54	2.11
Switching, rentals, and all other sources	1,333,159.65	934,316.06	398,843.59	42.70
Total revenues.....	\$77,360,429.36	\$74,422,776.81	\$2,937,652.55	3.95
Outside operations—revenue	1,390,032.19	1,616,448.10	226,415.91	14.01
Total revenues..	\$78,750,461.55	\$76,039,224.91	\$2,711,236.64	3.57
OPERATING EXPENSES.				
Maintenance of way and structures....	\$7,682,146.16	\$9,106,167.77	\$1,424,021.61	15.64

	This Year.	Last Year.	Increase or Decrease.	Per Cent.
Maintenance of equip-ment	\$7,434,599.27	\$8,325,812.27	\$891,213.00	10.70
Traffic expenses	1,563,030.85	1,399,556.22	\$163,474.63	11.68
Transportation ex-penses	17,914,908.92	19,427,488.20	1,512,579.28	7.79
General expenses....	1,908,390.75	1,918,491.16	10,100.41	0.53
Total rail lines.....	\$36,503,075.95	\$40,177,515.62	\$3,674,439.67	9.15
Outside operations—expenses	1,442,009.61	1,516,519.67	74,510.06	4.91
Total expenses..	\$37,945,085.56	\$41,694,035.29	\$3,748,949.73	8.99
Gross revenues over total expenses ...	\$40,805,375.99	\$34,345,189.62	\$6,460,186.37	18.81
PASSENGER TRAFFIC.				
Revenue passengers carried	7,217,853	6,450,286	767,567	11.90
Revenue passengers carried one mile..	795,199,750	760,532,906	34,666,844	4.56
Revenue from passenger trains per mile of road	\$3,633.55	\$3,563.71	\$69.84	1.96
Revenue from passenger trains per revenue train mile (a) ..	\$1.77	\$1.71	\$0.06	3.51
Average distance carried, miles....	110.17	117.91	7.74	6.56
FREIGHT TRAFFIC.				
(Way-bill Tonnage.)				
Tons of revenue freight carried ...	13,726,025	13,089,163	636,862	4.87
Tons of revenue freight carried one mile	5,266,658,054	5,271,939,813	5,281,759	0.10
Revenue per mile of road	\$8,907.79	\$9,147.46	\$239.67	2.62
Revenue per revenue train mile (b)....	\$4.63	\$4.31	\$0.32	7.42
Average distance carried—all freight, miles	383.70	402.77	19.07	4.73

Decreases shown in *Italics*.

(a) Revenue passenger train and all mixed train miles. (b) Revenue freight train and all mixed train miles.

Compared with the preceding year, the per cent. of operating expenses (including expenses of outside operations) to the gross revenues (including revenues from outside operations) was as follows:

	Rail Lines Only.	Outside Operations.
For "Maintenance" (Maintenance of Way and Structures, and Maintenance of Equipment).....	19.54	.....
For "Operation" (Traffic Expenses, Transportation Expenses, and General Expenses).....	27.64	.....
Total this year.....	47.18	48.18
Total last year.....	53.99	54.83

There was a decrease in the operating expenses for the half year ended December 31, 1908, of \$4,690,678.04, but, in the second half year ended June 30, 1909, the operating expenses increased \$941,728.31, making a net decrease for the year of \$3,748,949.73, or 8.99 per cent. A part of the increase in expenses for the second half year resulted from expenses incident to the greater amount of traffic moved; the remainder was for the usual repairs and renewals, which increase as the volume of traffic handled increases.

In the following statements, the operating expenses, although distributed as provided for in the classification of the Interstate Commerce Commission, have been combined under comprehensive titles of accounts so as to present the year's expenses in a concise form.

Maintenance of Way and Structures.

	This Year.	Last Year.	Increase or Decrease.	Per Cent.
Average miles—first, second and additional main tracks..	6,477.27	6,133.76	343.51	+ 5.60
Ballast	\$31,404.41	\$43,099.91	\$11,695.50	— 27.14
Ties	1,663,355.05	1,879,794.61	216,439.56	— 11.51
Rails	346,554.65	376,332.67	29,778.02	— 7.91
Frogs, switches and other track material	837,113.24	890,055.70	52,942.46	— 5.95
Total material for roadway and track	\$2,878,427.35	\$3,189,282.89	\$310,855.54	— 9.75
Repairs of roadway and track	2,969,813.62	3,442,235.11	472,421.49	— 13.72
Bridges, trestles, and culverts	392,453.76	532,501.34	140,047.58	— 26.30
Buildings, grounds, and appurtenances	843,343.30	1,292,424.20	449,080.90	— 34.75
Snow and sand fences and snow sheds....	12,440.72	15,618.44	3,177.72	— 20.35
Electric power, telegraph and telephone lines....	65,155.04	52,976.71	12,178.33	+ 22.99
Superintendence	475,021.88	529,916.59	54,894.71	— 10.36
Stationery and printing	19,507.53	25,639.09	6,131.56	— 23.91
Other expenses	25,982.96	25,573.40	409.56	+ 1.60
Total	\$7,682,146.16	\$9,106,167.77	\$1,424,021.61	— 15.64
Cost per mile—all main tracks	\$1,185.26	\$1,484.60	\$299.34	— 20.16

Decreases shown in *Italics*.

The weight of rails per yard in main lines and branches at the close of the year was as follows:

MILES OF MAIN TRACKS OPERATED, EXCLUDING MILEAGE OPERATED UNDER TRackage RIGHTS.

	Main tracks.	Branches.	Total.	Per cent. of total miles of track.	Per cent. last year.
Total	4,044.78	2,534.24	6,579.02	100.00	100.00
90-lb.	893.69	.02	893.71	13.59	10.58
85-lb.	37.11	.....	37.11	.57	.64
80-lb.	1,625.19	.02	1,625.21	24.70	26.00
75-lb.	604.20	144.02	748.22	11.37	9.59
70-lb.	880.36	386.69	1,267.05	19.26	21.12
67-lb.	.58	29.73	30.31	.46	.50
60-lb.	3.51	1,138.83	1,142.34	17.35	18.56
56-lb.	.14	567.44	567.58	8.63	9.25
Less than 56 lb.	.....	267.49	267.49	4.07	3.76

At the timber-treating plants of the Companies, 1,491,356 cross-ties and 11,864 switch-ties were burnettized and 65,745 cubic feet of piling and other timber were creosoted.

Transportation Expenses.

	This Year.	Last Year.	Increase or Decrease.	Per Cent.
Locomotives, fuel for.	\$5,440,119.54	\$6,587,582.87	\$1,147,463.33	— 17.42
Locomotive service, other than fuel.	3,763,862.88	3,927,581.21	163,718.33	— 4.17
Train service.	2,910,282.64	3,002,463.61	92,180.97	— 3.07
Station and terminal service.	3,733,702.98	3,829,343.50	95,640.52	— 2.50
Injuries, loss, damage and other casualties.	1,119,721.37	1,121,383.47	1,662.10	— .15
Superintendence.	779,737.26	759,442.35	20,294.91	+ 2.67
Advertising and printing, and other.	167,482.25	199,691.19	32,208.94	— 16.13
Total	\$17,914,908.92	\$19,427,488.20	\$1,512,579.28	— 7.79

The greater part of the decrease in these expenses was the result of a reduction in the cost of fuel per ton and a reduction in locomotive mileage because of the better train loading. There was an increase in the number of loaded cars per train of 10.51 per cent. and in the tons per train of 7.11 per cent.

The work done by the transportation department of the rail lines is shown in the following table:

	+ Increase. — Decrease.	Per Cent.
Gross operating revenues.	+ \$2,937,652.55	3.95
Transportation expenses.	— 1,512,579.28	7.79
Revenue passengers carried one mile.	+ 34,666,844	4.56
Mileage of passenger cars.	+ 4,901,981	6.49
Locomotive mileage with passenger trains, including helping.	+ 418,190	3.70
Tons of revenue freight carried one mile.	+ 5,281,750	.10
Tons of revenue and company freight carried one mile.	+ 109,926,610	1.75
Mileage of freight cars.	+ 13,795,389	3.57
Locomotive mileage with freight and mixed trains, including helping.	— 540,583	3.98
Total locomotive mileage in service for which the attendant expenses are charged to "Transportation Expenses."	— 703,114	2.38

The average number of tons of freight per train, and loaded cars per train (excluding caboose), and the tons per loaded car for the respective companies for the year were:

REVENUE AND COMPANY FREIGHT (Way-Bill Tonnage).	*TONS PER TRAIN		LOADED CARS PER TRAIN.		PER CENT. OF LOADED CAR MILEAGE TO TOTAL CAR MILEAGE.	TONS PER LOADED CAR.	
	Tons.	(+) Increase (-) Decrease. Tons. Per cent.	Cars.	(+) Increase (-) Decrease. Cars. Per cent.		Tons.	(+) Increase (-) Decrease. Tons. Per cent.
Union Pacific R. R. Co.	551.61	+ 44.85 8.85	27.05	+ 3.08 12.85	72.95 + 1.34	20.39	— 0.75 3.55
Oregon Short Line R. R. Co.	569.61	+ 43.34 8.24	22.03	+ 1.63 7.99	70.38 + .66	25.85	+ .06 .23
Oregon Railroad & Navigation Co.	496.13	— 18.58 3.61	21.08	+ .45 2.18	81.14 + .96	23.53	— 1.42 5.69
Average all lines	548.49	+ 36.42 7.11	25.14	+ 2.39 10.51	75.14 + 0.84	21.81	— 0.70 3.11

* Ton-miles per revenue freight train and all mixed train-miles.

UNION PACIFIC RAILROAD AND AUXILIARY COMPANIES.

No. 4.—Profit and Loss for the Year Ended June 30, 1909.

Discount and commission on \$29,603,432.06 face value Union Pacific R. R. Co. First Lien and Refunding Four Per Cent. Bonds and on \$1,751,000.00 face value Oregon R. R. & Navigation Co. Consolidated Mortgage Four Per Cent. Bonds sold and delivered during the year and for the extension of \$4,993,000.00 face value Utah & Northern Ry. Co. First Mortgage Bonds.	\$2,130,316.84	Balance June 30, 1908.	\$63,978,578.80
Reserve for depreciation of equipment owned and leased to other companies.	120,935.38	Balance income other than from transportation (No. 2).	\$8,073,187.50
Cost of Surveys written off.	28,670.35	Balance income from transportation operation operations (No. 3).	9,865,062.54
Balance June 30, 1909, viz.:		Difference between \$6,675,200.00 face value Union Pacific R. R. Co. Twenty Year Four Per Cent. Convertible Bonds retired, and canceled, and \$3,814,400.00 par value common stock issued in exchange therefor.	2,860,800.00
Income account.	\$82,034,192.82	Sinking fund contributions and income from sinking fund investments.	22,712.50
Sinking funds.	973,595.87	Miscellaneous collections.	\$108,106.43
	83,007,788.69	Less: Miscellaneous payments.	87,118.50
		Collections of old accounts.	\$273,320.33
		Less: Payments of old accounts.	2,829.02
		Adjustments in accounts.	270,491.31
		Proceeds from sale of unpledged lands and town lots.	192,050.80
			3,839.83
	\$85,287,711.26		\$85,287,711.26

The cost of fuel for locomotives per locomotive mile in revenue service and in non-revenue service for which the expenses are charged to transportation expenses was 18.827 cents per mile run against 22.239 cents in the preceding year and for the entire "Transportation Expenses" 62.00 cents against 65.637 cents in the preceding year.

General Expenses.

	This Year.	Last Year.	Increase or Decrease.	Per Cent.
Salaries and expenses of general officers.	\$240,833.56	\$224,830.82	\$16,002.74	+ 7.12
Salaries and expenses of clerks and attendants.	809,910.42	800,057.90	9,852.52	+ 1.23
Law expenses.	261,779.50	278,629.46	16,849.96	— 6.05
General office expenses.	91,415.47	127,137.81	35,722.34	— 28.10
Stationery and printing.	156,192.74	126,411.72	29,781.02	+ 23.56
Insurance.	145,083.21	162,445.13	17,361.92	— 10.69
Other expenses.	203,175.85	198,978.32	4,197.53	+ 2.11
Total	\$1,908,390.75	\$1,918,491.16	\$10,100.41	— .53

Decreases shown in *Italics*.

EDWARD H. HARRIMAN.

NEW YORK, September 13, 1909.

At a special meeting of the Board of Directors of the Union Pacific Railroad Company held at the office of the Company in the City of New York on Monday, September 13th, 1909, the following proceedings occurred:

Vice-President Lovett, presiding, said:

"Gentlemen we meet to-day in what, to each of us personally and to all these corporations, is the shadow of a great bereavement. One of the most remarkable men this country has ever produced, and certainly the greatest man of his generation, passed beyond when, at three thirty-five o'clock last Thursday afternoon at Arden Mr. Harriman died. To-day the whole world recognizes his genius and acclaims his great achievements. But we who were intimately associated with him know what the world does not—that there never was a kinder heart, a more sympathetic nature, a truer friend, or a man more loyal to his business associates and fellow workers. I am sure you wish to make some record of your appreciation of this extraordinary man."

Thereupon, on motion, a special committee composed of Directors Hughitt, Frick and Peabody was appointed to prepare and report suitable resolutions. The Committee retired and later reported the following resolutions, which, on motion, were unanimously adopted, viz.:

RESOLVED, That the Board of Directors of Union Pacific Railroad Company with deep sorrow records the death of Edward Henry Harriman at his country place at Arden, New York, at 3:35 o'clock on the afternoon of September 9th, 1909, in the sixty-second year of his age. He was more than Chairman of the Executive Committee and President, which offices, at the time of his death, he held and had long filled—he was the genius of the new Union Pacific and Southern Pacific; and the high state of efficiency to which these properties have been brought, the part that is being performed by them in the development of the country they serve, and the solid basis upon which the securities of said companies now rest, are monuments to his genius, marvelous energy, and untiring work in the interest of these companies.

It is impossible to here record any adequate expression of appre-

ciation of Mr. Harriman's work for the American Railroad System, for it must form a large and important chapter in the history of our times. But we who were intimately associated with Mr. Harriman appreciate even more the qualities which were less conspicuous to the public. The kindness of his heart, the strength of his friendship, the quickness of his sympathy, and his loyalty to all his associates were traits of his character so marked as to inspire the devotion of all who knew him well, and his happiness in his home circle was an inspiration and delight. We deeply mourn his loss as a personal friend and as the head of these Companies, and tender to his family our profound sympathy.

RESOLVED FURTHER, That an engrossed copy of these resolutions be transmitted by the Secretary to Mrs. Harriman.

A true copy; ALEX. MILLAR,
Secretary.

UNION PACIFIC AND AUXILIARY COMPANIES.

No. 5.—Assets, June 30, 1909.

(Excluding stocks and bonds owned of Auxiliary and Proprietary Companies and all offsetting accounts between them.)

ASSETS.	June 30, 1909.	June 30, 1908.	Increase or Decrease.
Capital Assets.			
Cost of railroads, equipment and appurtenances.....*	\$382,375,786.37	\$385,907,655.61	\$3,531,869.24
Cost of extensions.....	12,458,378.80	1,700,355.17	\$10,758,023.63
Stocks and bonds as detailed in Tables Nos. 9, 10, and 11.....	209,974,387.06	218,173,102.44	8,198,715.38
Trust funds	225,962.43	328,563.86	102,601.43
	\$605,034,514.66	\$606,109,677.08	\$1,075,162.42
Current Assets.			
Demand loans, Southern Pacific Co.		\$45,376,389.27	\$45,376,389.27
Loans to San Pedro, Los Angeles & Salt Lake R. R. Co.....	\$3,099,371.69	2,625,308.33	\$474,063.36
Loans to Utah Light & Railway Co.	2,371,370.00	8,929.90	2,362,440.10
Cash	26,990,450.56	4,395,934.40	22,594,516.16
Demand loans and time deposits	18,800,000.00		18,800,000.00
Agents and conductors.	924,164.59	1,014,043.59	89,879.00
Traffic and car service.	259,897.05		259,897.05
Income accrued to June 30, on securities owned	4,845,863.25	4,849,453.25	3,590.00
Individuals and companies	1,788,787.32	2,536,319.86	747,532.54
U. S. Government transportation	468,532.30	1,049,592.42	581,060.12
Deposits against matured or called bonds.	3,000.00		3,000.00
Material, fuel and supplies	11,083,491.02	12,232,475.62	1,148,984.60
	\$70,634,927.78	\$74,088,446.64	\$3,453,518.86
Deferred Assets.			
Advances for the construction and acquisition of new lines....	\$39,927,685.99	\$33,013,620.92	\$6,914,065.07
Ocean steamships "Manchuria" and "Mongolia"	5,119,723.10	5,126,796.58	7,073.48
Rolling stock	9,646,501.53	7,258,275.44	2,388,226.09
Land and miscellaneous property	1,302,651.46	6,771.43	1,295,880.03
Individuals and companies	503,022.96	9,824.27	493,238.69
	\$56,499,625.04	\$45,415,288.64	\$11,084,336.40
Contingent Assets.			
Unadjusted accounts....	\$1,551,819.56	\$1,457,894.52	\$93,925.04
Due from proprietary companies	968,188.60	790,487.19	177,701.41
Land and town lot contracts	3,117,300.66	3,542,429.21	\$425,128.55
	\$5,637,308.82	\$5,790,810.92	\$153,502.10
Total assets	\$737,806,376.30	\$731,404,223.28	\$6,402,153.02

* From year to year this cost has been written down by \$15,598, 252.12 received to date from the Improvement and Equipment Fund and by appropriations from "Income Account" amounting to \$16,959, \$16.24—a total of \$32,558,068.36.

Liabilities, June 30, 1909.

LIABILITIES.	June 30, 1909.	June 30, 1908.	Increase or Decrease.
Capital Liabilities.			
Union Pacific R.R. Co.:			
Common stock	\$199,302,300.00	\$195,487,900.00	\$3,814,400.00
Preferred stock	99,544,000.00	99,544,100.00	\$100.00
Stocks of Auxiliary Companies in hands of the public, viz.:			
Oregon R.R. & Nav. Co.:			
Common stock	20,100.00	20,100.00	
Preferred stock	3,410.00	3,410.00	
Total stocks	\$298,869,810.00	\$295,055,510.00	\$3,814,300.00
Funded debt (excluding bonds of Auxiliary and Proprietary Companies owned) ..	322,785,800.00	298,109,067.94	24,676,732.06
	\$621,655,610.00	\$593,164,577.94	\$28,491,032.06

	June 30, 1909.	June 30, 1908.	Increase or Decrease.
Current Liabilities.			
Traffic and car service.		\$100,749.09	\$100,749.09
Coupons matured but not presented	\$164,491.65	149,145.15	14,346.50
Coupons due July 1....	3,973,120.00	4,028,005.00	54,885.00
Interest accrued on bonds and loans to June 30	1,150,634.51	1,392,039.38	241,404.87
Dividends due but uncalled for	32,833.00	38,836.00	6,003.00
Dividends payable July 1 and October 1....	11,902,188.50	11,765,277.00	136,911.50
Bonds satisfied of mortgage	3,000.00	3,000.00	
Loans and bills payable		41,189,645.90	41,189,645.90
Voucher and payrolls...	4,863,303.41	4,112,357.27	750,946.14
	\$22,089,571.07	\$62,779,054.79	\$40,689,483.72

Deferred Liabilities.			
Taxes assessed but not due	\$1,109,448.33	\$1,085,066.52	\$24,381.81
Hospital department...	89,754.68	81,878.63	7,876.05
	\$1,199,203.01	\$1,166,945.15	\$32,257.86

Contingent Liabilities.			
Insurance fund	\$368,263.19	\$416,506.41	\$48,243.22
Trust accounts		54,027.45	54,027.45
Equipment replacement funds		97,683.39	97,683.39
Reserve for depreciation on steamships and rolling stock leased..	1,728,889.14	1,353,769.60	\$375,119.54
Union Pacific Coal Co.	3,244,314.34	1,736,885.11	1,507,429.23
Union Pacific Land Co.	58,559.47	53,559.47	5,000.00
Due to proprietary companies	1,336,876.73	3,060,205.96	1,723,329.23
Principal of deferred payments on land and town lot contracts...	3,117,300.66	3,542,429.21	425,128.55
	\$9,854,203.53	\$10,315,066.60	\$460,863.07

Balance to credit of profit and loss (Table No. 4)	\$83,007,788.69	\$63,978,578.80	\$19,029,209.89
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Total liabilities...\$737,806,376.30 \$731,404,223.28 \$6,402,153.02

UNION PACIFIC RAILROAD AND AUXILIARY COMPANIES.

No. 9.—Stocks Owned of Other Companies, June 30, 1909.

	Total Issued and Outstanding June 30, 1909.	Total.	+ Increase. — Decrease.
Company.			
Callente & Piche Railroad.			
Capital Stock			— \$15,000.00
Gray's Harbor & Puget Sound Railway.			
Capital Stock	\$10,000.00	\$10,000.00	
Green River Water Works Co.			
Capital Stock	225,000.00	225,000.00	
Ilwaco Railroad.			
Capital Stock	152,500.00	152,500.00	
Kansas City Terminal Railway.			
Capital Stock	1,000,000.00	100,000.00	
Leavenworth & Topeka Railway.			
Capital Stock	50,000.00	25,000.00	
Leavenworth Depot & Railroad.			
Capital Stock	150,000.00	50,000.00	
Occidental & Oriental Steamship.			
Capital Stock	10,000,000.00	8,750,000.00	
Ogden Union Railway & Depot.			
Capital Stock	300,000.00	150,000.00	
Oregon & Washington Railroad.			
Capital Stock	1,000,000.00	999,300.00	— 700.00
Pacific Express.			
Capital Stock	6,000,000.00	2,400,000.00	
Pacific Fruit Express.			
Capital Stock	10,800,000.00	5,400,000.00	
Rattlesnake Creek Water.			
Capital Stock	78,300.00	78,300.00	
St. Joseph & Grand Island Railroad.			
Common Stock	4,600,000.00	2,900,000.00	
First Preferred Stock...	5,500,000.00	932,200.00	
Second Preferred Stock..	3,500,000.00	1,250,000.00	
San Pedro, Los Angeles & Salt Lake Railroad.			
Capital Stock	25,000,000.00	12,500,000.00	
Short Line Land & Improvement.			
Capital Stock	100,000.00	50,000.00	
Topeka Iron.			
Capital Stock	110,000.00	55,000.00	
Union Depot & Railway (Denver).			
Capital Stock	400,000.00	240,000.00	
Union Depot (Kansas City).			
Capital Stock	500,000.00	45,000.00	
Union Land.			
Capital Stock	10,000.00	10,000.00	
Union Pacific Coal.			
Capital Stock	5,000,000.00	5,000,000.00	
Union Pacific Equipment Association.			
Capital Stock	100,000.00	100,000.00	
Union Pacific Land.			
Capital Stock	100,000.00	100,000.00	

Company.	Total Issued and Outstanding June 30 1909.	Total.	+ Increase. — Decrease.
Union Pacific Water.			
Capital Stock	\$500.00	\$500.00	.....
Utah Light & Railway.			
Common Stock	2,052,125.00	1,849,450.00	.....
Preferred Stock	3,996,500.00	3,837,875.00	+ 1,575.00
Total, 1909		\$47,210,125.00	— \$14,125.00
Total, 1908		47,224,250.00	.....

Of the total owned there are \$99,400.00 Union Pacific Land Stock pledged; all the remainder is unpledged.

UNION PACIFIC RAILROAD AND AUXILIARY COMPANIES.

No. 10.—Investment Stocks Owned, June 30, 1909.

COMPANY.	OWNED BY UNION PACIFIC RAILROAD AND AUXILIARY COMPANIES.		
	Union Pacific R. R. Co.	Oregon Short Line R. R. Co.	+ Increase. — Decrease.
Atch., Top. & Santa Fe Ry.			
Preferred Stock	\$10,000,000 00		.....
Baltimore & Ohio Railroad.			
Common Stock	32,334,200 00		.....
Preferred Stock	7,206,400 00		.....
Chicago & Alton Railroad.			
Preferred Stock	\$10,343,100 00		.....
Chic. & Northwestern Ry.			
Common Stock	3,215,000 00		.....
Chic., Mil. & St. Paul Ry.			
Common Stock			— \$1,340,000 00
Do., 65% paid....			— 3,272,500 00

UNION PACIFIC RAILROAD AND AUXILIARY COMPANIES.

No. 6.—Receipts and Expenditures from All Sources Year Ended June 30, 1909.

EXPENDITURES.

<i>Capital Expenditures.</i>	
Expenditures for construction and acquisition of new lines.....	\$2,810,959.41
Additions and betterments.....	4,861,764.03
Equipment	988,073.98
Cost of new lines, transferred from deferred assets	929,632.59
Miscellaneous improvements	12,414.83
Total	\$9,602,844.84
Deduct for:	
Receipts from improvement and equipment fund	\$2,030,000.00
Adjustment in accounts taken over under reorganization	98,895.62
Adjustment in other accounts.....	247,794.83
Total	\$2,376,690.45
Total	\$7,226,154.39
<i>Decrease in Liabilities.</i>	
Loans paid off.....	\$41,189,645.90
Due to Proprietary Companies.....	210,900.00
Total decrease	\$41,400,545.90
Less increases:	
Current cash accounts.....	\$332,465.98
Reserve for depreciation of steamships and rolling stock leased.....	375,119.54
Total increase	\$707,585.52
Total	40,692,960.38

OWNED BY UNION PACIFIC RAILROAD AND AUXILIARY COMPANIES.

COMPANY.	Union Pacific R. R. Co.	Oregon Short Line R. R. Co.	+ Increase. — Decrease.
Preferred Stock		\$1,845,000 00	.....
Great Northern Railway.			
Preferred Stock			— 3,578,600 00
Iron Ore properties, 38,864 shares (a) .....			.....
Illinois Central Railroad.			
Capital Stock	22,500,000 00		+ 2,376,900 00
N. Y. C. & Hudson R. R. R.			
Capital Stock		14,285,700 00	.....
Northern Pacific Railway.			
Common Stock			— 112,800 00
Do., 75% paid			— 1,801,600 00
Northern Securities.			
Stubs		724,900 00	.....
Railroad Securities.			
Common Stock	3,482,900 00		.....
Preferred Stock	1,935,900 00		.....
Southern Pacific.			
Common Stock (b)		90,000,000 00	.....
Preferred Stock (a)		34,200,000 00	.....
Total, 1909.....	\$38,261,900 00	\$193,811,200 00	— \$7,728,600 00
Total, 1908.....	35,885,000 00	203,916,700.00	.....
(a) Par value of shares not stated in certificate. 38,300 shares sold during the year.			
(b) All of the Common and \$18,000,000 00 of the Preferred deposited as collateral under Oregon Short Line Railroad Co. Four Per Cent. Refunding Mortgage. Of the total \$100,000,000 outstanding bonds, \$55,000,000 are a free asset in the treasury of the Union Pacific Railroad Company.			

RECEIPTS.

<i>Capital Liabilities.</i>	
U. P. R. R. Co. First Lien and Refunding Four Per Cent. Bonds sold.....	\$29,603,432.06
U. P. R. R. Co. common stock issued in exchange for Twenty Year Four Per Cent. Convertible Bonds, retired and canceled	3,814,400.00
O. R. R. & N. Co. Four Per Cent. Consolidated Mortgage Bonds sold.....	1,751,000.00
Total	\$35,168,832.06
Deduct for:	
U. P. R. R. Co. Twenty Year Four Per Cent. Convertible Bonds retired and canceled	\$6,675,200.00
U. P. R. R. Co. preferred stock acquired O. S. L. R. R. Co. Income "A" Bond acquired	100.00
Utah & Northern Ry. Co. First Mortgage Four Per Cent. Bonds, acquired and canceled	500.00
Total	\$6,677,800.00
Total	\$28,491,032.06
<i>Decrease in Assets.</i>	
Demand loans to Southern Pacific Co.	\$45,376,389.27
Stocks and bonds owned.....	8,198,715.38
Current cash accounts.....	1,261,766.04
Material, fuel and supplies.....	1,148,984.80
Total decrease	\$55,985,855.29
Less increases:	
Cash	\$22,594,516.16
Demand loans and time deposits.....	18,800,000.00
Loans to San Pedro, Los Angeles & Salt Lake R. R. Co.	474,063.36
Loans to Utah Light & Ry. Co.	2,362,440.10
Advances for the construction of new lines	6,906,991.59
Rolling stock	2,388,226.09
Due from Proprietary Companies.....	670,940.10
Lands and other miscellaneous property.....	1,295,880.03
Unadjusted accounts	93,925.04
Total increase	\$55,586,982.47
Total	398,872.82

Profit and Loss.

Gross operating revenues and revenues from outside operations	\$78,750,461.55
Interest, dividends and other income.....	18,428,512.80
Total revenue	\$97,178,974.35
Deduct for:	
Operating expenses and expenses of out- side operations	\$37,945,085.56
Taxes	2,570,561.89
Interest on funded debt and sinking fund requirements	13,343,381.40
Dividends on preferred and common stocks	23,660,151.22
Discount and commission on bonds sold.....	2,130,316.84
Miscellaneous expenses and charges.....	1,361,067.55
Total expenses and charges.....	\$81,010,564.46
Less:	
Difference between \$6,675,200, face value, U. P. R. R. Co. Twenty Year Four Per Cent. Convertible Bonds, re- tired and cancelled, and \$3,814,400, par value, common stock issued in ex- change therefor	2,860,800.00
Balance	\$78,149,764.46
Total	19,029,209.89
Total	\$47,919,114.77

Total

NORTHERN PACIFIC RAILWAY COMPANY—THIRTEENTH ANNUAL REPORT.

OFFICE OF THE
NORTHERN PACIFIC RAILWAY COMPANY,
ST. PAUL, MINNESOTA.

September 27, 1909.

To the Stockholders of the

NORTHERN PACIFIC RAILWAY COMPANY.

The following, being the Thirteenth Annual Report, shows the result of the operation of your property for the fiscal year ending June 30, 1909.

INCOME ACCOUNT.

	1908.	1909.	Increase or decrease.
REVENUE FROM TRANSPORTATION:			
Freight	\$46,423,836 33	\$47,073,305 13	\$649,468 80
Passenger	18,133,238 52	17,330,608 06	802,630 46
Other revenue from transportation	3,065,076 27	3,416,101 72	351,025 45
Totals	\$67,622,151 12	\$67,820,014 91	\$197,863 79
REVENUE FROM OPERATION other than transportation	598,526 08	640,732 30	42,206 22
Total operating revenue	\$68,220,677 20	\$68,460,747 21	\$240,070 01
Per mile (average)	\$12,110 18	\$12,071 46	\$38 72
OPERATING EXPENSES:			
Maintenance of way and structures	\$8,762,297 33	\$7,847,050 35	\$915,246 98
Maintenance of equipment	8,572,716 73	7,845,689 35	727,027 38
Traffic expenses	807,849 40	919,199 03	111,349 63
Transportation expenses	20,659,119 39	20,305,621 20	353,498 19
General expenses	1,038,701 09	1,102,444 72	63,743 63
Totals	\$39,840,683 94	\$38,020,004 65	\$1,820,679 29
Per mile (average)	\$7,072 31	\$6,703 94	\$368 37
Net operating revenue	\$28,379,993 26	\$30,440,742 56	\$2,060,749 30
Per mile (average)	5,037 87	5,367 52	329 65
OUTSIDE OPERATIONS:			
Sleeping, parlor, observation, dining and cafe cars and restaurants	640,925 86	429,359 58	\$211,566 28
Total net revenue	\$29,020,919 12	\$30,870,102 14	\$1,849,183 02
TAXES ACCRUED:			
Per mile (average)	2,717,485 67	2,547,834 67	169,651 00
Operating income	26,303,433 45	28,322,267 47	2,018,834 02
OTHER INCOME:			
Dividends and interest on securities, interest on deposits and miscellaneous	3,122,646 95	2,355,670 81	766,976 14
Rentals received	853,115 94	889,748 10	36,632 16
Hire of equipment	138,380 41	452,218 91	313,838 50
Gross income	\$30,417,576 75	\$32,019,905 29	\$1,602,328 54
DEDUCT:			
Rentals paid	\$318,718 38	\$337,136 34	\$18,417 96
Interest on funded debt	7,098,907 50	6,775,002 50	\$323,905 00
Interest and commissions on new stock subscriptions	3,106,882 75	3,268,416 36	161,533 61
Dividends on stock	10,850,000 00	14,105,000 00	3,255,000 00
Totals	\$21,374,508 63	\$24,485,555 20	\$3,111,046 57
Net	\$9,043,068 12	\$7,534,350 09	\$1,508,718 03
Less amount appropriated for insurance fund	\$2,784,950 28	.....	\$2,784,950 28
Net income for the year	\$6,258,117 84	\$7,534,350 09	\$1,276,232 25
Ratio of operating expenses to total operating revenue	58.40%	55.54%	2.86%
Ratio of taxes to total operating revenue	3.98%	3.72%	.26%

NOTE.—This income account, and its ancillary statements herein, have been prepared in accordance with the classifications promulgated by the Interstate Commerce Commission as revised to July 1, 1908, the accounts for the previous year having been recast for the purpose of comparison.

Decreases in *italics*.

MILEAGE OPERATED.

Changes have taken place in the mileage operated during the year as follows:

There were added:

	Miles.
Dec. 1, 1908. Lapwai Branch extended Vollmer to Grangeville, Idaho	31.78
Jan. 1, 1909. Vancouver, Washington, to North Portland, Oregon, acquired	5.41
March 1, 1909. St. Regis cut-off, Montana, constructed	21.69
June 30, 1909. Hawley, Minnesota, to Camp No. 2, constructed	7.74
June 30, 1909. Snake River Junction to Texas Ferry, Washington, acquired	41.03
June 30, 1909. Corrections by rechainning .....	.59
Total additions	108.24
Deductions:	
Jan. 1, 1909. Main Line Minnesota, released by substitution of new double track	12.28
Jan. 1, 1909. Vancouver Branch, Washington, shortened .....	.35
June 30, 1909. Main Line, Montana, shortened between Missoula and Garrison	4.93

June 30, 1909. Main Line, Minnesota, released by substitution of new double track

6.51	24.07
Total deductions	84.17
Net additions	5,649.13
Mileage operated June 30, 1908	5,733.30
Mileage operated June 30, 1909	5,671.29

EARNINGS.

FREIGHT BUSINESS.

Freight revenue was \$47,073,305.13, an increase of \$649,468.80 or 1.40 per cent. over the previous year.

5,260,492,660 tons of revenue freight were moved one mile, an increase of 104,114,291 tons one mile, or 2.02 per cent. over the previous year.

The rate per ton per mile decreased from .00900 to .00895.

The revenue trainload increased from 430.87 to 434.59 tons.

PASSENGER BUSINESS.

Passenger revenue was \$17,330,608.06, a decrease of \$802,630.46 or 4.43 per cent. from the previous year.

Mail revenue was \$1,063,056.90, an increase of \$67,736.48 or 6.81 per cent.

Express revenue was \$1,413,558.07, an increase of \$132,938.64 or 10.38 per cent.

Excess baggage and miscellaneous passenger revenue was \$310,483.95, an increase of \$45,447.55 or 17.15 per cent.

The total revenue for persons and property carried on passenger trains was \$20,117,706.98, a decrease of \$556,507.79 or 2.69 per cent. from the previous year.

The number of passengers carried was 8,404,712, an increase of 524,379 over the previous year, and the number of passengers carried one mile was 767,439,465, a decrease of 26,912,483 or 3.39 per cent.

The miles run by revenue passenger trains were 9,571,432, an increase of 509,604 or 5.62 per cent.

The rate per passenger per mile was .02258 and .02283 last year.

OPERATING EXPENSES.

MAINTENANCE OF EQUIPMENT.

The charges for Maintenance of Equipment were \$7,845,689.35, a decrease of \$727,027.38 or 8.48 per cent.

LOCOMOTIVES.

Total number of locomotives on active list June 30, 1908

1,314	13	13
Additions:		
Purchased,		
Pacific type passenger locomotives	10	
Atlantic type passenger locomotives	3	
		13
Deductions:		
Sold	3	
Dismantled	1	
		4

Total number on active list June 30, 1909

In addition to those on the active list there are thirty locomotives on the superannuated list.

HAULING CAPACITY.

The capacity of all engines on the active list as compared with last year is shown approximately by the following statement of total weights:

	Number.	Total weight on drivers.	Total weight of engines.
Assignment June 30, 1908	1,314	174,898,723	231,196,437
Added during fiscal year	13	1,745,900	2,923,650
Totals	1,327	176,644,623	234,120,087
Sold and scrapped during the fiscal year	4	344,950	476,900
Assignment June 30, 1909	1,323	176,299,673	233,643,187
Net increase	9	1,400,950	2,446,750
Percentage of increase .....	.68%	.80%	1.05%

PASSENGER EQUIPMENT.

On June 30, 1908, the Company owned 923 passenger train cars, including 103 sleeping cars owned jointly with the Pullman Company; on June 30, 1909, 1005 passenger train cars, including 103 sleeping cars owned jointly with the Pullman Company, a net increase of 82.

FREIGHT EQUIPMENT.

Comparative number and capacity of freight cars:

	1908		1909		Increase or decrease.	
	Number	Capacity (Tons).	Number	Capacity (Tons).	Nbr.	Capacity
Box	24,480	848,719	23,052	789,827	1,428	58,892
Furniture	465	11,725	428	10,800	37	925
Refrigerator	953	23,655	1,432	35,625	479	11,970
Fruit						
Stock	2,192	52,825	2,670	62,410	478	9,585
Flat	8,442	276,890	8,129	269,770	313	7,120
Oil	12	330	13	345	1	15
Coal	4,777	190,955	4,932	198,985	155	8,030
Ballast and ore	850	34,000	842	33,680	8	320
Totals	42,171	1,439,099	41,498	1,401,442	673	37,657
Percentage					1.60%	2.62%
Average capacity per car		34.1		33.8		.3

NOTE.—Figures in *italics* denote decrease.

In addition to equipment shown as on hand June 30, 1909, the following have been purchased or will be built at the Company's shops during the current year:

LOCOMOTIVES:	
Pacific type passenger locomotives.....	44
Mikado type freight locomotives.....	40
Six wheel type switch locomotives.....	15
Mallet compound mountain locomotives.....	11

110

FREIGHT TRAIN CARS:

2,000 40-ton box cars from manufacturers and 668 from Company's shops at South Tacoma.

PASSENGER TRAIN CARS:

16 new sleeping cars owned jointly with Pullman Company.

DEPRECIATION OF EQUIPMENT.

In accordance with the rules of the Interstate Commerce Commission the following amounts have been charged to operating expenses on account of estimated depreciation of equipment, viz.:

Maintenance of Equipment:

Locomotives	\$859,396.70
Passenger cars	230,741.01
Freight cars	1,605,700.14
Work cars	51,398.44
Floating equipment	7,565.15

\$2,754,801.44

MAINTENANCE OF WAY AND STRUCTURES.

The charges for Maintenance of Way and Structures were \$7,847,050.35, a decrease of \$915,246.98 or 10.45 per cent.

The property was well maintained and improved as shown by the following:

PERMANENT WAY.

New main line laid with 85-pound rail.....	29.43 miles.
New second track laid with 85-pound rail.....	115.54 "
Main line relaid with new 90-pound rail.....	13.67 "
Main line relaid with new 85-pound rail.....	374.18 "
Second track relaid with new 90-pound rail.....	19.00 "
Second track relaid with new 85-pound rail.....	5.34 "
Sidings and spur tracks constructed.....	130.77 "
Track ballasted	627.58 "
Embankment widened	191.70 "
Cross-tie renewals, main line	1,306,170 ties.
Cross-tie renewals, branch lines.....	971,010 "
Timber bridges replaced by permanent structures and embankments, 46 in number, equal to.....	1.65 miles.
Timber bridges renewed	44 "
Timber culverts replaced	217 "
New stock fence constructed.....	272.57 miles.
New snow fence constructed	0.50 "

BRIDGES.

During the year 90 bridges were replaced and 16 abandoned. 44 were replaced by timber structures, and 8 permanent and 38 timber structures were replaced in permanent form as follows:

Replaced by embankment, ... 29 bridges, 5,479 lineal feet.

Replaced by truss, girder and

1-beam spans 17 " 3,268 " "

Total 46 " 8,741 " "

44 timber bridges, 5,364 lineal feet, have been renewed.

217 timber culverts were rebuilt, 4 in temporary and 213 in permanent form.

There are now under construction on operated lines, 2,302 lineal feet of steel girders on concrete piers, 835 lineal feet of steel trestles and 1,616 lineal feet of reinforced concrete trestles. A plant has been established at Glendive, Montana, for the purpose of making concrete piles and slab girders, with which the present pile bridges, which it is not necessary to replace with steel girders, can be replaced in concrete with ballasted deck. It is expected that by the end of 1911 all timber structures on the main line between St. Paul and Livingston, Montana, will have been replaced with steel or concrete.

BRIDGES AS THEY EXIST JUNE 30, 1909.

	No.	Aggregate Length. Lineal Feet.	Miles.
Steel, iron, stone and concrete permanent bridges	518	79,765	15.11
Timber and combination iron and timber structures	2,736	422,307	79.98
Totals	3,254	502,072	95.09

The total length of timber structures replaced by steel bridges, embankment, or in other permanent form, from July 1st, 1885, when the work was commenced, to June 30th, 1909, has been 112.75 miles.

BUILDINGS.**Superior, Wisconsin—**

The new brick passenger station at Nettleton Avenue, mentioned in last report, was completed in October, 1908.

Cloquet, Minnesota—

A frame passenger station (joint with Great Northern Railway) is being erected and will be finished this autumn.

St. Paul, Minnesota—

An extension 48x300 feet of the freight house and general office building, Prince street, is being built, to be completed this autumn. The second story is to be utilized as an extension of the general offices.

St. Cloud, Minnesota—

A passenger station of brick with granite trimmings, with platforms, is under way, to be completed this autumn.

Detroit, Minnesota—

The brick passenger station, with platforms, mentioned in last report, has been completed.

Staples, Minnesota—

A brick passenger station and office building is being erected. The

second story will provide quarters for the division superintendent and his forces. The building will be completed this autumn.

Dulworth, Minnesota—

A brick office building, to provide quarters for division officers and forces has been completed.

Moorhead, Minnesota—

A brick freight house and office 30x160 feet, with necessary platforms, has been completed. The heating plant installed will also provide heat for passenger station.

Valley City, North Dakota—

A new passenger station, located on the new main line between Alta and Berea, is being erected, and will be completed this autumn.

Jamestown, North Dakota—

A brick lunch room has been completed.

Billings, Montana—

The new brick passenger station and brick lunch building have been completed.

A brick supply building for use in connection with passenger facilities has been erected.

Forsythe, Montana—

A frame lunch room has been completed.

Lewiston, Idaho—

The brick passenger station has been completed.

Pasco, Washington—

The frame lunch building mentioned in last report has been completed.

A frame, two-story recreation building is under way, to be completed this autumn.

North Yakima, Washington—

A passenger station and express building to be constructed of brick with sandstone trimmings, and platforms, is under way to be completed this autumn.

Ellensburg, Washington—

A passenger station, to be constructed of brick with sandstone trimmings, and platform, is under way, to be completed this autumn.

Tacoma, Washington—

The City of Tacoma has granted the franchise required for the construction of the new passenger terminal and work has been commenced. Contract has been awarded for the passenger station, train shed and platform.

Exterior walls of the station will be built of brick with sandstone trimmings; floor system and stairs will be reinforced concrete; roof and dome, steel.

COMBINATION STATIONS.

Frame combination stations have been constructed as follows:

In Montana: At Townsend, Cardwell, Pipestone, Silesia, St. Regis, Rivulet and Paradise.

In Idaho: At Kootenai.

In Washington: At Mondovi, Outlook, Bayne, Deer Island, Crawford and Grand View.

SHOPS, ENGINE FACILITIES, AND YARDS.**Laurel, Montana.**

The 40-stall roundhouse, shops, sewer and water facilities, coal dock and other division terminal buildings, with yards, mentioned in last report as being under construction, have been completed.

Paradise, Montana.

The 20-stall roundhouse, shops, sewer and water facilities, coal dock and other division terminal buildings, with yards, have been completed.

Kootenai, Idaho.

The 20-stall roundhouse, shops, sewer and water facilities, coal dock and other division terminal buildings with yards have been completed.

FUEL STATIONS.

Besides the coal docks at Laurel, Paradise, and Kootenai mentioned above, new docks have been erected in Montana at Livingston, Saltese, Rivulet, St. Regis and Trout Creek and at Aberdeen Junction, Washington.

WATER SUPPLY.

New steel water tanks of 100,000 gallons capacity have been completed at Brainerd, Minnesota; Laurel, Montana; Paradise, Montana, and Kootenai, Idaho.

New wooden water tanks of 100,000 gallons capacity have been completed at Witherow, Minnesota; Mandan, North Dakota; St. Regis, Rivulet and Belknap, Montana; and Ridgefield, Washington.

Gravity water supply has been installed at Castle Rock, Washington and Easton, Washington.

INTERLOCKING PLANTS.**Superior, Wisconsin.**

The mechanical interlocking plant at crossing of C. St. P. M. & O. Ry. has been remodeled and enlarged from a 24 lever machine with 22 working levers to a 52 lever machine with 34 working levers.

An electric interlocking plant has been installed at the Wisconsin draw-bridge over St. Louis Bay. This is a 24 lever machine with 18 occupied spaces.

Duluth, Minnesota.

An electric interlocking plant has been installed at the Minnesota draw-bridge over St. Louis Bay. This is a 20 lever machine with 16 occupied spaces.

A mechanical interlocking plant has been installed at the junction with the Duluth, Missabe & Northern Railway at 27th Avenue. This is a 24 lever machine with 19 working levers.

St. Paul, Minnesota.

An electric interlocking plant has been installed in Mississippi Street yard. This is a 40 lever machine with 37 occupied spaces and takes the place of an old 24 lever mechanical machine with 20 working levers.

Manitoba Junction, Minnesota.

Authority has been granted for the installation of a mechanical interlocking plant at this point at the junction of Red River branch with new main line. The machine will be 24 lever frame with 19 working levers.

Carman, Minnesota.

Contract has been awarded for installation of a mechanical interlocking plant at this point at crossing of Great Northern Railway, the machine to be 24 lever frame with 21 working levers.

Garrison, Montana.

Contract has been awarded for installation of a mechanical interlocking plant at this point at end of double track and junction with Northern Pacific Butte Line, the machine to be 24 lever frame with 21 working levers.

Montana Division, First District.

Authority has been granted for the installation of automatic block signals between Laurel and Livingston. There will be 176 electric signals of three-position type.

Tacoma, Washington.

Ten additional automatic block signals have been installed between this point and South Tacoma.

Tacoma-Seattle Line.

Contract has been awarded for installation of automatic block signals between Tacoma and Seattle. There will be 51 electric signals of three-position type.

TIE TREATING PLANTS.

Brainerd, Minnesota.

7,365 lineal feet of trackage, one additional 160,000 gallon steel storage tank for creosote oil and one 100,000 gallon steel water tank for fire protection have been added to this plant.

Paradise, Montana.

13,315 lineal feet of trackage and one 160,000 gallon steel storage tank for creosote oil have been added to the plant.

There were treated during the year ending June 30, 1909, 463,220 ties at Brainerd and 584,979 at Paradise.

DOCKS AND WHARVES.

Seattle, Washington.

Work on extensions of piers Nos. 1 and 2 to new harbor is under way.

A portion of the piles under the present piers Nos. 1 and 2 have been protected from teredo action by lock joint cement pipe.

A new shed has been built along the side of pier No. 3.

The dock and freight sheds at West Seattle have been extended.

CHARGES TO CAPITAL ACCOUNT.

Upon requisition of the Executive Officers, approved by the Board of Directors, expenditures have been made during the past fiscal year for:

REAL ESTATE, RIGHT OF WAY AND TERMINALS:

At Superior, Wisconsin, real estate.....	\$44,410 18
St. Paul, Minnesota, real estate.....	103,138 75
Minneapolis, Minnesota, real estate.....	23,290 00
Dilworth, Minnesota, terminals (Cr.).....	475 52
Laurel, Montana, terminals.....	251,311 03
Paradise, Montana, terminals.....	252,549 34
Sand Point, Idaho, terminals.....	286,503 97
Lewiston, Idaho, passenger station, yard and tracks.....	49,066 42
Spokane, Washington, real estate.....	403 00
Seattle, Washington, terminals, tunnel and passenger station.....	69,910 10
Tacoma, Washington, terminals.....	112,769 29
Hoquiam, Washington, real estate.....	8,000 00
	\$1,200,876 56

BRANCHES, LINE CHANGES, GRADE REVISIONS AND SECOND MAIN TRACK:

One third interest in double track line Vancouver to North Portland, including bridges over Columbia and Willamette Rivers. (Two thirds owned by Spokane, Portland & Seattle Railway Co.).....	\$1,993,357 48
St. Regis to Paradise, Montana, new line.....	648,402 23
White Pine Hill, Montana, grade revision.....	488,708 99
Tacoma-Tenino Line, Washington.....	567,816 05
Gray's Harbor & Columbia River Ry., Washington.....	85,353 09
Green River Branch extension, Washington.....	49,770 13
De Smet to St. Regis, Montana.....	793,974 92
Rights of way at Seattle, Washington, for changes of line and new tracks.....	505,457 99
Surveys and rights of way in North Dakota.....	23,774 16

Superior to Central Ave., Wisconsin, second main track.....	\$12,263 10
Wadena to Lake Park, Minnesota, second main track.....	9,318 58
Lake Park to Glyndon, Minnesota, second main track.....	698,921 19
Glyndon to Moorhead, Minnesota, second main track.....	386 59
Haggart to Casselton, North Dakota, second main track.....	99 23
Wheatland to Buffalo, North Dakota, second main track.....	223,947 05
Alta to Berea, North Dakota, second main track.....	36,709 62
Livingston to Muir, Montana, second main track.....	117,722 13
West End to Bozeman, Montana, second main track.....	3,864 49
Garrison to Missoula, Montana, second main track.....	2,759,811 53
Auburn to Meeker, Washington, second main track.....	88,197 36
Vancouver to Kalama, Washington, second main track.....	823,828 42
	9,931,684 33

ADDITIONS AND BETTERMENTS:

Right of way and station grounds.....	\$111,556 73
Widening cuts and fills.....	24,090 66
Protection of banks.....	27,642 88
Grade revisions and changes of line.....	16,546 45
Tunnel improvements.....	2,644 86
Bridges, trestles and culverts.....	230,365 29
Increased weight of rail and fastenings.....	203,025 91
Ballast.....	94,229 00
Additional main tracks.....	83,528 82
Sidings and spur tracks.....	211,548 77
Terminal yards.....	264,715 26
Fencing right of way.....	29,820 89
Improvement of over and under grade crossings.....	1,256 36
Track elevation, elimination of grade crossings, etc.....	28,797 54
Interlocking apparatus.....	11,694 03
Block and other signal apparatus.....	4,326 67
Telegraph and telephone lines.....	29,168 82
Station buildings and fixtures.....	243,408 34
Shops, enginehouses and turntables.....	27,008 11
Shop machinery and tools (Credit).....	21,390 88
Water and fuel stations.....	29,307 81
Dock and wharf property.....	101,009 27
Miscellaneous structures.....	47,549 42
	\$1,801,851 11

NEW EQUIPMENT:

Locomotives.....	\$202,151 03
Passenger cars.....	826,601 38
Freight and work cars.....	931,588 84
	1,960,341 25

Total for the year\$14,894,753 25

In addition to the above amount added to the cost of the Northern Pacific Estate, advances have been made to sundry companies, as follows:

Spokane, Portland & Seattle Railway Company.....	\$2,374,104 67
Clearwater Short Line Railway Company.....	4,216,003 20
Big Fork & International Falls Railway Company.....	53,483 32
Missouri River Railway Company.....	7,390 68
Western Dakota Railway Company.....	226,021 01
Shields River Valley Railway Company.....	169,392 70

Total\$7,046,395 58

CAPITAL STOCK AND DEBT.

The capital stock outstanding June 30, 1908, amounted to.....	\$155,000,000 00
The new capital stock to be issued, as explained in the Annual Report for 1907, amounting to.....	93,000,000 00

has been subscribed, making a total of.....\$248,000,000 00 (of which, as shown in the Balance Sheet herein, \$2,387,000 was, at the date of this report, held in the form of subscription receipts, not having been exchanged for certificates.)

As shown by the statement in the report of the Comptroller, the bonded debt of the company increased\$1,197,760 68

JOINT LINES WITH THE UNION PACIFIC RAILWAY COMPANY.

The road between Lewiston, Idaho, and Texas Ferry, Washington, 72.03 miles, and between Cul de Sac and Grangeville, Idaho, 54.84 miles, is completed and in operation. Arrangements for joint operation in the interest of the owning companies are now being made.

SPOKANE, PORTLAND & SEATTLE RAILWAY.

Lines east of Pasco have been completed and were turned over for operation on May 3rd, 1909, as follows:

Pasco to Snake River Junction, Washington.....	26.09 miles.
Snake River Junction to Riparia (Texas Ferry), Washington.....	41.03 "
Snake River Junction to Marshall, Washington.....	111.79 "
On the line from Marshall to Great Northern Junction (Spokane).....	7.19 "

grading and bridging have been completed and track will be laid by August 1st, 1909.

That part of the Spokane, Portland & Seattle Railway between Snake River Junction and Riparia, 41.03 miles, was purchased by the Northern Pacific Railway Company and the cost thereof included in the expenditures for the Clearwater Short Line.

NEW LINES, DOUBLE TRACK, GRADE REVISIONS AND LINE CHANGES.

MINNESOTA.

Lake Park to Glyndon, Second Main Track, 26.83 miles.

This work is still in progress. Completion has been delayed on account of a sink hole encountered near Stockwood for about one mile. It is expected to obtain the use of the entire line late this autumn.

NORTH DAKOTA.

Wheatland to Buffalo, Second Main Track, 11.2 miles.

This work has been completed.

Missouri River Railway.

Contracts have been let and construction is in progress as follows:

From Mandan north along the Missouri River 53 miles.

From Mandan south along the Missouri River 72 miles.

Work on the grading is well advanced and will be ready for rails early in 1910.

Western Dakota Railway, (Cannon Ball Line).

Contract has been let for 90 miles of line.

Work on grading is progressing favorably and will be completed in May, 1910.

MONTANA.

Missouri River Railway.

Contract has been let for 50 miles of line extending from Glendive northeasterly along the Yellowstone River.

Grading has been commenced.

Shields River Valley Railway.

Contract has been let for 23 miles of line.

All grading is completed and road will be in operation by December 1.

Garrison to Missoula.

Line changes, grade revisions and second track work, 69.1 miles.

The work has been completed.

Clearwater Short Line Railway, Lo Lo Pass Line.

Contract has been let for the first 38 miles west from Lo Lo station to Lo Lo Pass and contractors are getting their outfits on the ground.

On the west side surveys are in progress.

De Smet to St. Regis, 72 miles.

Revision and repairs of the Coeur d'Alene Branch on a 0.5 per cent. grade line and present location.

This work has been completed.

St. Regis to Paradise, 21.8 miles.

This new line has been completed.

White Pine Hill, 28.4 miles.

The work consisting of change of line and grade has been completed.

WASHINGTON.

Connell Northern Railway.

Connell to Adrian, 62 miles.

Contract has been let and grading is making favorable progress.

Ritzville Branch, 38 miles.

Contract has been let and contractors are getting forces on the work.

Auburn to Mecker, 7.5 miles double track.

This work has been completed.

Vancouver to Kalama, 29.9 miles second main track and revisions.

The revision of line and grading for second main track have been completed and track will be finished by October 31, 1909.

Tenino to Kalama, 66.0 miles of double tracking and revisions.

Contract has been let.

The second track will be completed between Tenino and Chehalis, a distance of 15 miles, this fall.

GENERAL.

The flood damage in Montana mentioned in the last report turned out to be as great as anticipated and the heavy repairs and bridge adjustments made necessary are just being completed.

In the Minnesota Rate Case the testimony has been closed during the year and it is hoped the arguments will be made late this autumn.

The report of the Comptroller gives further details of the transactions of the Company.

By order of the Board of Directors,

HOWARD ELLIOTT,
President.

RESOURCES AND DISBURSEMENTS, YEAR ENDING JUNE 30, 1909.
(Being a condensed statement of the financial operations for the year.)

RESOURCES.	
Cash on hand and in banks June 30, 1908.	\$34,900,794 91
RECEIPTS:	
Balance after expenses, taxes and fixed charges	\$21,639,350 09
Balance of sundry accounts credited	26,293 45
Profit and Loss	21,665,643.54
Land Department:—	
Proceeds of sales	\$1,807,726 06
Interest collected on deferred payments	88,783 13
	\$1,896,509 19
Less, expenses and taxes	397,467 79
Sale of sundry property, etc.	1,104,537 64
	\$59,170,017 49
DECREASE IN SECURITIES:	
In hands of Trustee of St. Paul-Duluth Division Bonds as collateral	64,606 08
PAYMENTS ON SUBSCRIPTIONS TO NEW CAPITAL STOCK	30,118,164 03
INCREASE IN MORTGAGE DEBT:	
Issue of Northern Pacific Railway Co. Prior Lien Bonds	\$1,022,000 00
Issue of Northern Pacific Railway Co. St. Paul-Duluth Division Bonds	178,000 00
	\$1,200,000 00
Less, decrease in St. Paul & Duluth R. R. Car Trust Notes	2,239 32
	1,197,760 68
LIABILITIES INCREASED:	
Unpaid pay rolls, vouchers, etc.	\$760,138 27
Unpaid interest and dividends	1,553,893 75
Reserve accounts	2,722,221 00
	5,036,253 02
	\$95,586,801 30
DISBURSEMENTS.	
EXPENDITURES:	
Dividends on stock	\$14,105,000 00
New lines and real estate	\$11,132,560 89
New equipment	1,960,341 25
Additions and betterments	1,801,851 11
	14,894,753 25
	\$28,999,753 25
CASH in hands of Trustees of Sinking Funds	944,687 14
CURRENT ASSETS INCREASED:	
Accounts and bills receivable	\$6,128,882 64
Advances to railway companies	7,223,931 94
Treasury securities	18,552,504 42
Material and supplies	53,297 75
Current assets of land department	170,034 17
	32,128,650 92
LIABILITIES DECREASED:	
Taxes accrued	\$247,757 09
Liquidation account	65,498 87
	313,255 96
CASH on hand and in banks June 30, 1909	33,200,454 03
	\$95,586,801 30

INCOME ACCOUNT.

FOR THE FISCAL YEAR ENDING JUNE 30, 1909.

Dr.		Cr.	
To		By	
OPERATING EXPENSES:		OPERATING REVENUES:	
Maintenance of way and structures	\$7,847,050 35	Freight	47,073,305 13
Maintenance of equipment	7,845,689 35	Passenger	17,330,608 06
Traffic expenses	919,199 03	Other	4,056,834 02
Transportation expenses	20,305,621 20		\$68,460,747 21
General expenses	1,102,444 72	OUTSIDE OPERATIONS:	
	\$38,020,004 65	Sleeping cars	\$331,506 08
TAXES:		Parlor and observation cars	62,614 57
State and county	2,547,834 67	Dining and cafe cars (Deficit)	32,781 39
INTEREST AND RENTALS:		Restaurants	68,020 23
Interest on funded debt	\$6,775,002 50		\$429,859 58
Interest and commission on new stock subscriptions	3,268,416 36	RENTALS RECEIVED	
Rentals of leased roads and terminals	335,921 51	HIRE OF EQUIPMENT	889,748 10
Other rentals	1,214 83	MISCELLANEOUS INCOME	452,218 91
	\$10,380,555 20	DIVIDENDS AND INTEREST on securities owned and interest on deposits	15,011 89
DIVIDENDS:			2,340,658 92
Nos. 44, 45, 46 and 47	14,105,000 00		
BALANCE carried to credit of Profit and Loss below	7,534,350 09		
	\$72,587,744 61		\$72,587,744 61

PROFIT AND LOSS ACCOUNT.

JUNE 30, 1909.

To	
BALANCE	\$58,172,008 07
	\$58,172,008 07

By	
BALANCE to credit June 30, 1908, as per annual report	\$50,611,364 53
BALANCE of sundry accounts written off	26,293 45
BALANCE of Income for year ending June 30, 1909, brought down	7,534,350 09
	\$58,172,008 07

By	
BALANCE to credit of Profit and Loss as per balance sheet	\$58,172,008 07

GENERAL BALANCE SHEET, JUNE 30, 1909.

CAPITAL ASSETS.

NORTHERN PACIFIC ESTATE:	
Balance of this account June 30, 1908.	\$332,327,240 88
To which add:	
New mileage, grade revisions and second track constructed since	\$9,931,684 33
Real estate and terminals purchased since	1,200,876 56
Additions and betterments since	1,801,851 11
	12,934,412 00
	\$345,261,652 88
Less:	
Net proceeds of Land Department.	\$1,499,041 40
Sale of sundry property	1,038,958 37
Balance of Liquidation Fund written off	65,579 27
	2,603,579 04
	\$342,658,073 84
EQUIPMENT:	
Balance of this account June 30, 1908.	\$39,484,863 89
New equipment purchased or built since	1,960,341 25
	41,445,205 14
PROPERTY LEASED TO PROVINCE OF MANITOBA:	
Value of road and appurtenances	\$6,812,512 94
Value of equipment	157,034 00
Value of material and supplies	30,453 06
	7,000,000 00
CASH IN HANDS OF TRUSTEES OF SINKING FUNDS	1,928,742 50
SECURITIES IN HANDS OF TRUSTEE of St. Paul-Duluth Division Bonds, as collateral	1,288,241 25
COST OF SECURITIES IN HANDS OF TRUSTEE of Northern Pacific-Great Northern joint bonds as collateral (1,076,135 shares C. B. & Q. R. R. capital stock—Northern Pacific Railway Company one-half owner) ..	109,114,809 76
	Total \$503,435,072 49

CURRENT ASSETS.

CASH ASSETS:	
Cash on hand and in banks	\$33,200,454 03
Accounts receivable....	\$9,339,406 31
Bills receivable	3,889,273 92
	13,228,680 23
Material on hand....	6,166,685 92
	35,827,074 13
TREASURY SECURITIES....	
CONSTRUCTION ADVANCES TO RY. COMPANIES:	
Spokane, Portland & Seattle Railway Company	\$28,888,997 95
Clearwater Short Line Railway Company ..	7,582,417 70
Big Fork & International Falls Railway Company	735,674 24
Missouri River Railway Company	119,015 38
Western Dakota Railway Company	291,932 67
Shields River Valley Railway Company ..	169,392 70
	37,787,430 64
INSURANCE FUND ASSETS:	
Cash, bonds, etc.	5,139,278 35
LAND DEPARTMENT:	
Balance of Land Department current assets	2,535,231 13
	Total 133,884,834 43
	\$637,319,906 92

CAPITAL LIABILITIES.

CAPITAL STOCK:	
Common stock issued to June 30, 1908.	\$155,000,000 00
Additional common stock issued	\$90,613,000 00
Additional common stock to be issued on surrender of subscription receipts....	2,387,000 00
	93,000,000 00
	\$248,000,000 00
MORTGAGE DEBT:	
Prior lien bonds.....	\$113,150,000 00
Less bonds canceled...	5,143,500 00
	108,006,500 00
General lien bonds.....	
St. Paul-Duluth Division bonds	10,419,000 00
Less bonds cancelled..	2,339,000 00
	8,080,000 00
Northern Pacific-Great Northern joint bonds—total issue	215,227,000 00
Less, Gt. Northern Railway Company's proportion	107,613,500 00
	107,613,500 00
	283,700,000 00
	Capital Liabilities Issued \$531,700,000 00
Indebtedness of other companies assumed by Northern Pacific Railway Company:	
St. Paul & Northern Pacific Railway Company general mortgage bonds	\$8,021,000 00
St. Paul & Duluth Railroad first mortgage bonds	1,000,000 00
St. Paul & Duluth Railroad second mortgage bonds	2,000,000 00
St. Paul & Duluth Railroad first consolidated mortgage bonds....	1,000,000 00
Taylor's Falls & Lake Superior Railroad bonds (guaranteed by St. Paul & Duluth Railroad Company)	210,000 00
Duluth Short Line Railway bonds (guaranteed by St. Paul & Duluth Railroad Company)	500,000 00
Washington & Columbia River Railway first mortgage bonds.....	2,620,000 00
	Capital Liabilities Assumed 15,351,000 00
	Total \$547,051,000 00

CURRENT LIABILITIES.

PAY ROLLS, VOUCHERS AND MISCELLANEOUS ACCOUNTS	\$7,135,858 29
TAXES ACCRUED ON RAILWAY (partly estimated)	1,707,652 32
INTEREST ON MORTGAGE DEBT:	
Accrued.....	\$505,616 66
Matured, including interest due July 1, 1909	1,128,389 50
	1,634,006 16
DIVIDENDS UNPAID:	
Common stock dividend, No. 47, due August 2, 1909	4,340,000 00
Unpaid dividends St. Paul & Duluth Railroad Company	1,854 50
	4,341,854 50
	Total 14,819,371 27

CONTINGENT LIABILITIES.

INSURANCE FUND ACCOUNT.....	\$5,139,278 35
RESERVE ACCOUNTS:	
For improvement and for replacement of equipment, etc.....	12,138,249 23
	Total 17,277,527 58

PROFIT AND LOSS.

Balance June 30th, 1909, as per statement.....	\$58,172,008 07
	\$637,319,906 92

MORTGAGE DEBT JUNE 30, 1909.

(EXCLUSIVE OF THE NORTHERN PACIFIC-GREAT NORTHERN JOINT BONDS OUTSTANDING.)

Name.	Amount outstanding.	Date.	Matures.	Rate.	Interest—When payable.	Amt. charged income for fiscal year.*
ISSUED:						
Northern Pacific Ry. Co. prior lien mortgage.....	\$108,006,500 00	1897	1997	4%	Jan., April, July, Oct....	\$4,109,450 00
Northern Pacific Ry. Co. general lien mortgage.....	60,000,000 00	1897	2047	3%	Feb., May, Aug., Nov....	1,641,212 50
Northern Pacific Ry. Co. St. Paul-Duluth Division mortgage	8,080,000 00	1900	1996	4%	June, Dec.	309,760 00
ASSUMED:						
St. Paul & Northern Pacific Ry. mortgage.....	8,021,000 00	1883	1923	6%	Feb., Aug.†	481,260 00
St. Paul & Duluth R. R. first mortgage.....	1,000,000 00	1881	1931	5%	Feb., Aug.	50,000 00
St. Paul & Duluth R. R. second mortgage.....	2,000,000 00	1887	1917	5%	April, Oct.	100,000 00
St. Paul & Duluth R. R. first consolidated mortgage.	1,000,000 00	1898	1968	4%	June, Dec.	40,000 00
St. Paul & Duluth R. R., Taylor's Falls & Lake Superior mortgage	210,000 00	1884	1914	6%	Jan., July	12,600 00
St. Paul & Duluth R. R., Duluth Short Line mortgage	500,000 00	1886	1916	5%	March, Sept.	25,000 00
Washington & Columbia River Ry. first mortgage....	2,620,000 00	1895	1935	4%	Jan., July.....	5,720 00
Total	\$191,437,500 00					\$6,775,002 50

*Interest on bonds in treasury not included above, viz.: Prior Lien Bonds, \$6,005,000.00; General Lien Bonds, \$7,449,000.00; St. Paul-Duluth Division Bonds, \$191,000.00; Washington & Columbia River Railway Bonds, \$2,477,000.00.

†Registered interest payable quarterly.

PASSENGER AND FREIGHT STATISTICS.

	1907-1908		1908-1909		Increase.	Per Ct.	Decrease.
	Passengers, miles, tons, etc.	Amount, rate, etc.	Passengers, miles, tons, etc.	Amount, rate, etc.			
Average mileage for the year.....	5,633.33	.....	5,671.29	.....	37.96	...	.....
PASSENGER TRAFFIC:							
Number of passengers carried.....	7,880,333	.....	8,404,712	.....	524,379	6.65	.....
Number of passengers carried one mile	794,351,948	.....	767,439,465	.....	.....	3.39	26,912,483
Average miles traveled by each passenger	100.8	.....	91.3	.....	.....	9.42	9.5
Passenger revenue	\$18,133,238.52	.....	\$17,330,608.06	.....	.....	4.43	\$802,630.46
Other passenger train revenue.....	2,540,976.25	.....	2,787,098.92	.....	\$246,122.67	9.69	.....
Total passenger train revenue.....	20,674,214.77	.....	20,117,706.98	.....	.....	2.69	556,507.79
Av. amt. paid by each passenger....	2.30	.....	2.06	.....	.....	10.43	.24
Av. rate per passenger per mile....	.02283	.....	.02258	.....	.....	1.10	.00025
Passenger train revenue per mile of road (average mileage).....	3,669.98	.....	3,547.29	.....	.....	3.34	122.69
FREIGHT TRAFFIC:							
Number tons revenue freight carried	15,836,823	.....	16,800,504	.....	963,681	6.09	.....
Number tons revenue freight carried one mile.....	5,156,378,369	.....	5,260,492,660	.....	104,114,291	2.02	.....
Average distance haul of one ton..	325.6	.....	313.1	.....	.....	3.84	12.5
Freight revenue	\$46,423,836.33	.....	\$47,073,305.13	.....	\$649,468.80	1.40	.....
Other freight train revenue.....	583,338.56	.....	888,948.58	.....	305,610.02	52.39	.....
Total freight train revenue.....	47,007,174.89	.....	47,962,253.71	.....	955,078.82	2.03	.....
Average receipts from each ton of freight	2.93	.....	2.80	.....	.....	4.44	.13
Average receipts per ton per mile revenue freight .....	.00900	.....	.00895	.....	.....	.56	.00005
Freight train revenue per mile of road (average mileage).....	8,344.47	.....	8,457.03	.....	112.56	1.35	.....
TOTAL TRAIN TRAFFIC:							
Revenue from freight and passenger trains	\$67,681,389.66	.....	\$68,079,960.69	.....	\$398,571.03	.59	.....
Revenue per mile of road (average mileage)	12,014.45	.....	12,004.32	.....	.....	.09	10.13
Revenue per train mile.....	3.22	.....	3.14	.....	.....	2.48	.08
Expenses per train mile.....	1.89	.....	1.75	.....	.....	7.41	.14
Net traffic revenue per train mile..	1.33	.....	1.39	.....	.06	4.51	.....

NOTE.—This statement has been prepared in accordance with the revised rules of the Interstate Commerce Commission, the items for the previous year being recast for purpose of comparison.

ST. LOUIS AND SAN FRANCISCO RAILROAD COMPANY—THIRTEENTH ANNUAL REPORT.

To the Stockholders:

The Board of Directors herewith submit their report of the operations and affairs of the St. Louis and San Francisco Railroad Company's Lines (exclusive of the Chicago & Eastern Illinois Railroad), for the fiscal year ended June 30th, 1909.

The results of operation for the fiscal year were as follows:

Operating revenue (increase \$2,389,605.55 or 6.7 per cent.).....	\$38,195,737.66
Operating expenses (increase \$156,728.65 or 1/8 of 1 per cent.).....	25,164,014.40
Net operating revenue (increase \$2,232,876.90 or 20.7 per cent.).....	\$13,031,723.26
Taxes	1,544,604.00
Miscellaneous income.....	\$11,487,119.26
	1,409,791.78
Total income.....	\$12,896,911.04
Interest, rentals and other fixed charges.....	11,568,325.70
Net income after providing for all charges.....	\$1,328,585.34
Dividends paid—four per cent. on first preferred stock.	199,742.12
Surplus carried to profit and loss.....	\$1,128,843.22

A comparative Income Account showing the increase or decrease for the year, of each class of earnings and expenses accompanies this report.

MILEAGE OPERATED.

The average main track mileage operated during the year was 5,251.06 miles, being an increase over the average mileage operated in preceding year of 186.90 miles.

The total mileage operated at June 30th, 1909, was 5,253.49 miles. Being an increase over preceding year of..... 189.33 "

This increase is due to the taking over from construction as of July 1st, 1908, the
Beaumont, Sour Lake & Western Railway..... 116.84 "
Orange & Northwestern Railroad..... 61.55 "

And as of September 21st, 1908, the
Carrollton-Irving Cut-Off (under trackage agreement) .. 10.94 "

Total increase..... 189.33 miles.

CAPITAL STOCK.

There were no changes during the year in the amount of capital stock issued and outstanding. The amount remains the same as at the reorganization of the Company in 1896.

FUNDED DEBT AND EQUIPMENT BONDS AND NOTES.

The total funded debt at June 30, 1908, was.....	\$189,890,717.74
The total equipment trust bonds and notes at June 30, 1908, was.....	17,668,682.19
Total	\$207,559,399.93
The total funded debt at June 30, 1909, was.....	\$199,339,619.30
The total equipment trust bonds and notes at June 30, 1909, was.....	15,033,551.99
Total	214,373,171.29
The net increase in funded debt and equipment notes during the fiscal year was.....	\$6,813,771.36

\$999,900, of the five year 4 1/2 per cent. notes due December 1st, 1908, were redeemed on that date and the balance, \$6,125,000 were by agreement extended for one year to December 1st, 1909. (The extended notes were paid on August 6th, 1909.)

Cash for the redemption at maturity of \$15,529,928.93 St. Louis, Memphis & Southeastern Railroad Company five year 4½ per cent. gold bonds was deposited prior to June 1st, 1909, with the Bankers Trust Company, New York. At August 31, 1909, all but \$62,000 had been presented and paid.

\$35,000,000, of the general lien 5 per cent. gold bonds were sold during the year, and the proceeds applied to the payment of matured underlying lien bonds, equipment obligations and floating debt.

GENERAL.

A trackage agreement dated February 15th, 1909, was made with the Louisiana Railway and Navigation Company for trackage rights between Baton Rouge and New Orleans, La., 77.51 miles. This will give your Company the shortest route between Houston, Texas, and New Orleans, La.

The most important addition was the new engine and car shops at Springfield, Mo., which were completed at the close of the fiscal year, and placed in operation on July 5th, 1909.

The report of the industrial department for the year shows a very satisfactory increase in the number of industrial plants located on

the Company's tracks during the year. There were located 327 industries employing 8,710 men and costing \$7,330,500. It is estimated that these new industries will load in and out over eighty thousand carloads per annum.

The operating revenue per mile of road increased \$203.41 over preceding year, while the operating expenses decreased \$145.91 per mile, making an increase of \$349.32 in the net operating revenue per mile of road.

It was not deemed necessary by your Directors to incur the expense of having the usual expert examination of the books and accounts of the Company made at the close of the fiscal year, for the reason that the books and accounts are kept in accordance with the Interstate Commerce Commission regulations and are subject to inspection by experts of the Commission.

Acknowledgment is hereby made of the faithful and efficient service rendered by officers and employees during the year.

By order of the Board of Directors.

A. J. DAVIDSON,
President.

October 1st, 1909.

ST. LOUIS AND SAN FRANCISCO RAILROAD LINES.
Condensed Balance Sheet, June 30, 1909, and Comparison with Previous Year.

ASSETS.	1909.	1908.	Increase or decrease.	LIABILITIES.	1909.	1908.	Increase or decrease.
Capital Assets:				Capital Liabilities:			
Franchises and property.	\$190,601,738.51	\$173,103,510.34	\$17,498,228.17	Capital stock:			
Stocks and bonds owned.	203,845.69	203,845.69	.....	First preferred.....	\$5,000,000.00	\$5,000,000.00	.....
Total franchises and property.....	\$190,805,584.20	\$173,307,356.03	\$17,498,228.17	Second preferred....	16,000,000.00	16,000,000.00	.....
Leasehold estate (The Kansas City, Fort Scott and Memphis Railway).....	55,203,841.11	52,312,051.01	2,891,790.10	Common.....	29,000,000.00	29,000,000.00	.....
Leasehold estate (Kansas City, Memphis and Birmingham railroad).....	9,175,875.76	9,175,875.76	.....	Total.....	\$50,000,000.00	\$50,000,000.00	.....
Franchises and property, auxiliary companies..	11,418,205.87	7,763,776.06	3,654,429.81	Funded debt.....	142,549,332.71	134,624,997.74	\$7,924,334.97
Chicago and Eastern Illinois Railroad Company preferred stock (Cost of).....	9,321,550.00	9,321,550.00	.....	Equipment bonds and notes.....	13,045,551.99	15,239,582.19	2,194,030.20
Chicago and Eastern Illinois Railroad Company common stock (Cost of).....	18,239,237.13	18,239,237.13	.....	Outstanding securities on leasehold estate (The K. C. F. S. & M. Ry.):			
Equipment under equipment trusts.....	.....	\$16,943,628.79	16,943,628.79	Stock—			
Total.....	\$294,164,294.07	\$287,063,474.78	\$7,100,819.29	Preferred certificates	13,510,000.00	13,510,000.00	.....
Current Assets:				Funded debt.....	39,891,300.00	39,095,300.00	796,000.00
Cash in treasury.....	721,497.84	370,142.93	351,354.91	Equipment bonds and notes.....	1,988,000.00	2,429,100.00	441,100.00
Cash in hands of fiscal agents.....	3,799,483.89	2,291,838.06	1,507,645.83	Total.....	\$55,389,300.00	\$55,034,400.00	\$354,900.00
Due from agents and conductors.....	1,160,025.22	1,037,921.59	122,103.63	Outstanding securities on leasehold estate (K. C. M. & B. R. R.):			
Due from railroad companies account traffic.....	43,214.98	55,615.14	12,400.16	Funded debt.....	9,247,420.00	9,247,420.00	.....
Due from companies and individuals.....	1,770,216.16	3,190,741.80	1,420,525.64	Capital stock auxiliary companies.....	55,000.00	.....	55,000.00
Due from United States P. O. Department....	103,745.06	248,707.40	144,962.34	Funded debt, auxiliary companies.....	7,651,566.59	6,923,000.00	728,566.59
Securities in treasury..	7,024,078.66	21,545,685.73	14,521,607.07	Construction certificates, auxiliary companies..	1,404,930.85	.....	1,404,930.85
Supplies on hand.....	3,105,409.71	3,986,303.57	880,893.86	Preferred stock trust certificates (C. & E. I. R. R.).....	9,317,550.00	9,317,550.00	.....
Advances account construction.....	3,610,065.74	3,597,824.64	12,241.10	Common stock trust certificates (C. & E. I. R. R.).....	18,044,500.00	18,044,500.00	.....
Total.....	\$21,337,737.26	\$36,324,780.86	\$14,987,043.60	Total.....	\$306,705,152.14	\$298,431,449.93	\$8,273,702.21
Deferred Accounts:				Current Liabilities:			
Open carrying accounts in process of adjustment.....	589,602.38	527,443.33	62,159.05	Audited vouchers and pay rolls.....	4,202,518.51	5,374,338.58	1,171,820.07
Discount on bonds, carried in suspense, to be charged out in annual installments.....	4,849,094.56	.....	4,849,094.56	Interest and dividends matured.....	2,691,110.96	2,510,660.70	180,450.26
Trustees sinking fund accounts.....	448,370.64	406,895.53	41,475.11	Interest accrued (not due).....	1,403,991.98	1,147,176.38	256,815.60
Sinking funds.....	78,184.07	77,912.07	272.00	Taxes accrued (not due).....	424,722.94	165,488.89	259,234.05
Total.....	\$5,965,251.65	\$1,012,250.93	\$4,953,000.72	Notes payable.....	1,713,329.12	11,987,035.90	10,273,706.78
Total assets.....	\$321,467,282.98	\$324,400,506.57	\$2,933,223.59	Total.....	\$10,435,673.51	\$21,184,700.45	\$10,749,026.94
				Provisional Accounts:			
				Sinking funds accrued....	285,078.08	282,554.87	2,523.21
				Equipment replacement fund (auxiliary companies).....	19,572.41	5,747.14	13,825.27
				Improvement fund (Kansas City and Memphis Railway and Bridge Company)...	7,486.50	7,563.47	76.97
				Total.....	\$312,136.99	\$295,865.48	\$16,271.51
				Grand total liabilities.....	\$317,452,962.64	\$319,912,015.86	\$2,459,053.22
				Profit and loss.....	4,014,320.34	4,488,490.71	474,170.37
				Total.....	\$321,467,282.98	\$324,400,506.57	\$2,933,223.59

NOTE.—In stating the assets and liabilities of the companies covered by this balance sheet, the holdings of the St. Louis and San Francisco R. R. Co. in the bonds and capital stocks of leased and auxiliary lines are eliminated.

†Transferred to Franchises and Property and Leasehold Estate (The K. C. F. S. & M. Ry.) at June 30th, 1909.

*Decreases in italics.

ST. LOUIS AND SAN FRANCISCO RAILROAD LINES.
INCOME ACCOUNT.

FISCAL YEAR ENDED JUNE 30TH, 1909, COMPARED WITH PREVIOUS YEAR.

	1908-9.	1907-8.	Increase or Decrease. Amount.	Pr ct.
Av. mileage op't'd..	5,251.06	5,064.16	186.90	3.7
Operating revenue—				
Freight	\$25,618,875.74	\$23,976,296.87	\$1,642,578.87	6.9
Passenger	9,655,885.73	8,927,036.90	728,848.83	8.2
Mail	1,002,335.00	979,927.21	22,407.79	2.3
Express	1,133,291.29	1,129,153.27	4,138.02	0.4
Miscellaneous	543,585.43	557,149.04	13,563.61	2.4
Total trans. rev..	\$37,953,973.19	\$35,569,563.29	\$2,384,409.90	6.7
Rev. from operation other than trans.	241,764.47	236,568.82	5,195.65	2.2
Total op. rev....	\$38,195,737.66	\$35,806,132.11	\$2,389,605.55	6.7
Operating expenses—				
Maintenance of way and structures....	\$5,094,615.70	\$4,671,416.27	\$423,199.43	9.1
Mainten. of equip..	4,638,515.91	4,559,107.25	79,408.66	1.7
Traffic expenses ..	894,874.17	833,678.98	61,195.19	7.3
Transp'tion expenses	13,294,083.88	13,663,632.92	369,549.04	2.7
General expenses...	1,241,924.74	1,279,450.33	37,525.59	2.9
Total op. expenses	\$25,164,014.40	\$25,007,285.75	\$156,728.65	0.6
Net op. revenue....	\$13,031,723.26	\$10,798,846.36	\$2,232,876.90	20.7
Taxes	1,544,604.00	948,414.62	596,189.38	62.9
Operating income..	\$11,487,119.26	\$9,850,431.74	\$1,636,687.52	16.6

Miscell. income—

Outside operations..	\$32,078.81	\$32,078.81	...
Hire of equipment...	\$395,608.02	455,145.24	149,537.22 32.9
Other income.....	1,715,399.80	1,950,141.86	234,742.06 12.0
Total mis. income.	\$1,409,791.78	\$1,462,917.81	53,126.03 3.6
Total income.....	\$12,896,911.04	\$11,313,349.55	\$1,583,561.49 14.0
Interest	\$6,620,102.33	\$6,118,752.18	\$501,350.15 8.2
Rentals and sinking funds—			
Int. on guar. sec..	2,591,631.12	2,564,203.43	27,427.69 1.1
Other rentals and sinking funds...	721,710.25	536,445.80	185,264.45 34.5
Dividends on trust certificates, The K. C., Ft. S. & M. Ry.	540,400.00	540,400.00	.....
Dividends on trust certificates, C. & E. Ill. Rd.	1,094,482.00	1,094,482.00	.....
Total charges...	\$11,568,325.70	\$10,854,283.41	\$714,042.29 6.6
Available for div.	\$1,328,585.34	\$459,066.14	\$869,519.20 189.4
Dividends—			
Four per cent. on first pfd. stock..	\$199,742.12	\$199,742.12	.....
Surplus carried to credit of profit and loss.....	\$1,128,843.22	\$259,324.02	\$869,519.20 335.3

Figures in italics denote debit or decrease.

NOTE.—To preserve comparisons the revenue and operating expenses and other figures for year 1907-8 are re-stated hereon to conform with the classification of the Interstate Commerce Commission, effective July 1, 1908.

THE CHICAGO, ROCK ISLAND AND PACIFIC RAILWAY COMPANY—TWENTY-NINTH ANNUAL REPORT.

To the Stockholders:

The Board of Directors herewith submit their report of the operations and affairs of the Rock Island Lines for the fiscal year ended June 30, 1909.

The results of the operations for the year were as follows:

Total operating revenue (increase \$2,700,- 690.07, or 4.6 per cent.).....	\$61,184,886.95
Operating expenses (increase \$377,315.44, or .9 per cent.).....	42,513,495.41
Net operating revenue (increase \$2,323,374.63, or 14.2 per cent.)...	\$18,671,391.54
Taxes (increase \$480,969.76, or 26.9 per cent.)	2,270,864.55
Operating income	\$16,400,526.99
Miscellaneous income	211,470.89
Total income	\$16,611,997.88
Interest and rentals	10,445,767.14
Balance of income, after providing for all charges, being 8.2 per cent. on capital stock (\$75,000,000.00)	\$6,166,230.74
Dividends paid (5½ per cent. on capital stock)	3,930,018.75
Balance surplus for the year (increase \$1,447,894.58, or 183.7 per cent.).....	\$2,236,211.99

To afford proper comparison, the percentages of increase are computed on basis of last year's figures revised according to modifications in classification of operating expenses prescribed by the Interstate Commerce Commission, effective July 1, 1908.

For comparative income account in detail, see table following:

CAPITAL STOCK.

The capital stock of the company outstanding at the close of the previous fiscal year was \$74,859,600.00, and is unchanged at June 30, 1909.

FUNDED DEBT.

During the year the funded debt increased \$3,775,000.00, equipment notes decreased \$1,051,541.00 and the two-year notes for \$6,000,000.00 were paid April 1, 1909, making a net decrease in funded and other fixed interest bearing debt of \$3,276,541.00.

FRANCHISES AND PROPERTY.

The cost of franchises and property increased \$1,039,815.01. There were also expended \$2,602,558.18 for additions and improvements.

NEW LINES CONSTRUCTED.

Of the line between Amarillo, Tex., and Tucumcari, N. M., which has been shown as under construction by The Chicago, Rock Island and Gulf, and Chicago, Rock Island and El Paso Railway companies, 12.11

miles west from Wildorado to Vega, Tex., were placed in operation March 17, 1909, 1.97 miles to Ontario, Tex., were placed in operation May 1, and 5.92 miles west of Ontario on May 15, 1909. The line is laid with 60-pound steel rail. Standard station buildings have been completed at Bush and Wildorado, Tex.

NEW EQUIPMENT.

Orders have been placed during the year for 100 passenger train cars of steel construction, 60 caboose cars, 2 service cars, 35 locomotives and 1 passenger motor car. There were received and placed in service 33 locomotives, 1 passenger train car, 2 service cars and 2 motor cars (1 ordered last year), and 1 service car has been built. In addition to the foregoing there have been ordered, since July 1, 1909, for delivery in 1909 and 1910, 50 locomotives, 1 passenger motor car and 3,550 freight train cars.

GENERAL.

Announcement was made last year of the completion of the line of the Rock Island, Arkansas and Louisiana Railroad from Haskell, Ark., near Little Rock, to Eunice, La. The Colorado Southern, New Orleans and Pacific Railroad, with which your line connects at Eunice, was completed in August, 1909, and the through line into New Orleans is now in operation.

During the fiscal year there were established in the territory through which your company's rails are laid four hundred and two new industries, as shown in the records of the industrial department. These are estimated to have cost over eight millions of dollars, to employ over eleven thousand persons, and to create a movement of over fifty-seven thousand carloads annually.

Three new side tracks were built to coal mines and eighty-two to private industries; extensions were added to three mine tracks and to twenty-one tracks to other industries.

The work of installing automatic block signals between Davenport and Muscatine, Ia., Davenport and Iowa City, Ia., and between Topeka and Herington, Kan., has been completed during the year. Signals for 232 miles of main line in the state of Iowa are being installed. At June 30, 1909, 346 miles of main line were protected by automatic block signals, at a cost of \$456,359.09.

At the close of the year the telephone system of train dispatching had been installed on 419.5 miles of your line at a cost of \$33,214.14, and authority had been given for 181 additional miles, for which material has been purchased and work is in progress.

For the completion of the additional and improved terminals mentioned in the reports of the last two years, and for new facilities of a similar nature, your company has expended during the current fiscal year, \$644,307.32.

Of the large increase in taxes, amounting to \$480,969.76, or 26.87 per cent., \$16,490.49 is in the state of Arkansas, \$13,377.23 in Louisiana, \$14,732.94 in New Mexico, and \$436,548.89 in Oklahoma. The remainder, comprising smaller increases and decreases, is distributed over the other states in which your road operates. In Arkansas and Louisiana the valuations during the preceding year were low because of newly constructed road in New Mexico no taxes are assessed against

railroads until five years after they have been placed in operation, therefore the first taxes on your line in that state were for the calendar year 1908, causing the report for last year to show only one-half the annual taxes, while this report includes taxes for an entire year. In Oklahoma the taxes assessed are for a period of considerably more than a year, are the first assessed by the new state and, it is thought, will later be substantially reduced.

Your company advanced, during the year, towards the construction, equipment and operating deficit of The Trinity & Brazos Valley Railway, \$651,685.60, making the total advances to June 30, 1909, \$1,936,640.86, of which \$697,247.69 was reimbursed out of the proceeds of bonds of The Colorado and Southern Railway Company, leaving \$1,239,393.17 outstanding advances as of June 30, 1909.

Advances during the year, for Galveston, Tex., terminals were \$89,563.26, making the total advances to June 30, 1909, \$471,673.70. First mortgage six per cent. bonds of the Galveston Terminal Railway Company were received in settlement of \$456,148.70, leaving \$15,525.00 outstanding advances as of June 30, 1909.

Advances during the year, for Houston, Tex., terminals were \$66,360.14, making the total advances to June 30, 1909, \$303,102.13. First mortgage bonds of the Houston Belt and Terminal Railway Company were received in settlement of \$277,669.55, leaving \$25,432.58 outstanding advances as of June 30, 1909.

In consequence of the supervision of the company's accounts now exercised by the Interstate Commerce Commission, and the fact that these accounts are kept in strict accordance with regulations prescribed by the Commission, it has been deemed by your directors unnecessary to incur the expense of having them certified by an independent auditor. Regular monthly income accounts, verified, under oath, by the president and general auditor of the company, have been duly filed with the Commission, and the annual report with sworn verification has also been filed as required by law.

By order of the Board of Directors,

October 15, 1909.

B. L. WINCHELL, President.

ROCK ISLAND LINES—INCOME ACCOUNTS.

	YEAR ENDED JUNE 30, 1909, COMPARED WITH		PREVIOUS YEAR.	
	1908-09.	1907-08.	Amount.	Pr. Ct.
Av. mileage operated	8,026.38	7,969.53	56.85	.71
Revenue from transportation:				
Freight	\$39,158,053.16	\$37,899,356.36	\$1,258,696.80	3.32
Passenger	17,883,378.99	16,693,110.45	1,190,268.54	7.13
Mail	1,429,829.62	1,398,173.95	31,655.67	2.26
Express	1,626,931.53	1,424,183.36	202,748.17	14.24
Miscellaneous	720,280.57	701,800.51	18,480.06	2.63
Total transportation revenue	\$60,818,473.87	\$58,116,624.63	\$2,701,849.24	4.65
Revenue from operations other than transportation	366,413.08	367,572.25	1,159.17	.32
Total op. rev.	\$61,184,886.95	\$58,484,196.88	\$2,700,690.07	4.62
Operating expenses:				
Maint. of way and structures	\$9,051,830.36	\$8,078,025.53	\$973,804.83	12.05
Maint. of equipment	7,512,888.55	7,358,589.65	154,298.90	2.10
Traffic expenses	1,441,214.58	1,486,473.58	45,259.00	3.04
Transportation exp.	22,848,052.39	23,600,341.75	752,289.36	3.19
General expenses	1,659,509.53	1,612,749.46	46,760.07	2.90
Total op. exp.	\$42,513,495.41	\$42,136,179.97	\$377,315.44	.90
Net operat'g revenue	\$18,671,391.54	\$16,348,016.91	\$2,323,374.63	14.21
Taxes	2,270,864.55	1,789,894.79	480,969.76	26.87
Operating income	\$16,400,526.99	\$14,558,122.12	\$1,842,404.87	12.66
Outside operations (debit balance)	\$146,201.11	\$92,727.28	\$53,473.83	57.67
Hire of equipment (debit balance)	812,116.05	912,279.35	100,163.30	10.98
Other income	1,169,788.05	1,133,640.08	36,147.97	3.19
Total	\$211,470.89	\$128,633.45	\$82,837.44	64.40
Total income	\$16,611,997.88	\$14,686,755.57	\$1,925,242.31	13.11

CONDENSED GENERAL BALANCE SHEET, JUNE 30, 1909, AND COMPARISON WITH PREVIOUS YEAR.

ASSETS.		1909.	1908.	Increase or decrease.	LIABILITIES.		1909.	1908.	Increase or decrease.
Capital assets:					Capital liabilities:				
Franchises and property	\$250,725,442.89	\$249,685,627.88	\$1,039,815.01		Capital stock	\$75,000,000.00	\$75,000,000.00		
Additions and improvements, current year	2,602,558.18	3,902,698.07	1,300,139.89		Funded debt	195,625,000.00	191,850,000.00	\$3,775,000.00	
Advances for construction and equipment	5,637,214.10	4,093,461.58	1,543,752.52		Equipment notes	5,900,000.00	6,951,541.00	1,051,541.00	
Real estate	641,996.52	641,991.02	5.50		Collateral trust gold notes, due April 1, 1909, (extended one year from April 1, 1908)		6,000,000.00	6,000,000.00	
Investment account—stocks representing ownership of Rock Island lines in sundry properties	1,795,575.38	1,950,422.39	154,847.01		Total	\$276,525,000.00	\$279,801,541.00	\$3,276,541.00	
Bonds of Toledo, St. Louis and Western Railroad Company	9,120,551.23	9,120,551.23			Current liabilities:				
Rock Island Improvement Company, equipment purchased under indenture of February 1, 1907	7,892,369.90	7,892,369.90			Unpaid vouchers and drafts	\$2,654,993.79	\$4,489,081.52	\$1,834,087.73	
American Locomotive Company, equipment purchase under indenture of October 15, 1907	774,221.61	782,055.00	7,833.39		Unpaid wages	2,131,475.38	1,983,342.09	148,133.29	
Total	\$279,189,929.81	\$278,069,177.07	\$1,120,752.74		Traffic balances	303,274.07	2,183.40	305,457.47	
Current assets:					Interest, rentals and dividends, due July 1	2,618,679.00	2,372,904.00	245,775.00	
Cash	\$3,211,108.09	\$2,485,735.98	\$725,372.11		Taxes accrued (not due)	1,024,399.04	1,124,040.37	99,641.33	
Station agents and conductors	1,792,960.82	1,865,914.15	72,953.33		Interest and rentals accrued (not due)	1,567,647.21	1,485,547.67	82,099.54	
Companies and individuals	2,851,944.17	3,094,647.17	242,703.00		Interest coupons due and not presented	58,160.00	284,527.50	226,367.50	
Express companies	103,118.26	348,052.38	244,934.12		Dividends due and not called for	6,768.07	5,986.32	781.75	
United States post office department	120,260.22	356,662.62	236,402.40		Bonds matured, not presented	3,000.00	7,900.00	4,900.00	
Advances for construction, equipment, etc., fundable	500,632.31	711,060.89	210,428.58		Notes payable	1,590,000.00	3,520,000.00	1,930,000.00	
Loans and bills receivable	3,693,785.55	3,283,019.99	410,765.56		Total	\$11,958,396.56	\$15,271,146.07	\$3,312,749.51	
First and refunding mortgage gold bonds—pledged against notes payable		4,606,500.00	4,606,500.00		Deferred liabilities:				
Bonds, etc., in treasury—unpledged	9,609,251.21	14,918,133.71	5,308,882.50		Open carrying accounts in process of adjustment	\$355,418.94	\$69,329.87	\$425,248.81	
Stocks in treasury—unpledged	925,542.11	921,131.23	4,410.88		Reserve for replacement of leased line equipment	222,732.25	222,732.25		
Accrued income from investments	233,323.16	194,076.27	39,246.89		Total	\$578,151.19	\$152,902.38	\$425,248.81	
Prepaid insurance	147,915.23	166,891.52	18,976.29		Total liabilities	\$289,061,547.75	\$295,225,589.45	\$6,164,041.70	
Material and supplies	5,724,800.61	5,256,578.68	468,221.93		Provisional accounts:				
Total	\$28,914,641.74	\$38,208,404.59	\$9,293,762.85		Reserve for replacement of equipment	\$779,527.51	\$2,366,011.38	\$1,586,483.87	
Grand total	\$308,104,571.55	\$316,277,581.66	\$8,173,010.11		Insurance fund	440,532.37	436,285.63	4,246.74	
NOTE. —In stating the assets and liabilities of the companies forming the Rock Island Lines, the holdings of The Chicago, Rock Island and Pacific Railway Company in the bonds and capital stock of the auxiliary lines, together with loans between the various companies, have been eliminated from the liabilities, and a like reduction made in the assets pertaining thereto; the figures shown, therefore, represent the book value of the assets and the liabilities without duplication.					Hospital fund	55,703.41	47,401.63	8,301.78	
					Special improvement and equipment fund		2,043,171.52	2,043,171.52	
					Total	\$1,275,763.19	\$4,892,870.16	\$3,617,106.87	
					Grand total liabilities (including provisional accounts)	\$290,337,311.04	\$300,118,459.61	\$9,781,148.57	
					Profit and loss	17,767,260.51	16,159,122.05	1,608,138.46	
					Grand total	\$308,104,571.55	\$316,277,581.66	\$8,173,010.11	

Figures in italics denote debits or decreases.

	1908-09.	1907-08.	Increase or decrease.	Pr. Ct.
Interest	\$8,861,223.05	\$8,413,221.92	\$448,001.13	5.32
Rentals	1,567,966.93	1,545,231.70	22,735.23	1.47
Betterments on leased lines	16,577.16	10,199.54	6,377.62	62.53
Total charges...	\$10,445,767.14	\$9,968,653.16	\$477,113.98	4.79
Bal. of income (available for dividends)	\$6,166,230.74	\$4,718,102.41	\$1,448,128.33	30.69
Dividends	3,930,018.75	3,929,785.00	233.75	.01
Bal. surplus (carried to credit of profit and loss)	\$2,236,211.99	\$788,317.41	\$1,447,894.58	183.67
DIVIDENDS DECLARED DURING YEAR ENDED JUNE 30, 1909.				
Dividend No. 113, 1% per cent. paid October, 1908.....			\$1,310,006.25	
Dividend No. 114, 1% per cent. paid January, 1909.....			748,575.00	
Dividend No. 115, 1½ per cent. paid April, 1909.....			1,122,862.50	
Dividend No. 116, 1% per cent. paid July, 1909.....			748,575.00	
Total, 5½ per cent.			\$3,930,018.75	
Decreases shown in italics.				
PROFIT AND LOSS.				
Credit balance, June 30, 1908.....			\$16,159,122.05	
Surplus for year ended June 30, 1909.....		\$2,236,211.99		
Special improvement and equipment fund.....		2,043,911.78		
Sundry adjustments not affecting current year's income		87,084.61		
		\$4,367,208.38		
Less:				
Discount, commissions and expenses on stocks and bonds issued and sold, and expenses on option canceled.....		\$1,567,436.93		
Depreciation on:				
Tracks removed.....	49,054.37			
Structures sold, removed or destroyed	36,623.49			
Equipment sold or destroyed	887,602.65			
Amount paid for damage by fire to property at Chickasha, Okla., April 11, 1907, not belonging to nor in the custody of your company	206,977.27			
Betterments on leased lines prior to current fiscal year	11,375.21	2,759,069.92	1,608,138.46	
Credit balance, June 30, 1909.....			\$17,767,260.51	

SECURITIES OWNED IN CURRENT ASSETS.

JUNE 30, 1909.

	Face Value.	Book Value.
<i>Included in bonds, etc., in treasury—unpledged:</i>		
Atchison Union Depot and Railroad Company	\$4,500.00	
Chicago, Rock Island and Pacific Railroad Company (of Iowa).....	490,650.00	
Consolidated Indiana Coal Company.....	273,000.00	
Crawford County Mining Company.....	585,000.00	
Dawson Railway and Coal Company.....	250,000.00	
Dering Coal Company.....	450,000.00	
Kankakee and Seneca Railway Company	325,000.00	
Kansas City and Northwestern Railway Company	8,000.00	
Minnesota Transfer Railway Company	46,000.00	
Omaha Auditorium Company.....	5,000.00	
Peoria Railway Terminal Company.....	1,500.00	
Rock Island Improvement Company.....	1,029,080.94	
Rock Island Improvement Company—equipment series A.....	2,700,000.00	
Rock Island Improvement Company—equipment series B.....	3,640,000.00	
Total	\$9,807,730.94	
<i>Included in stocks in treasury—unpledged:</i>		
Cedar Rapids, Iowa Falls and Northwestern Railway Company.....	\$604,500.00	
Central City Elevator Company.....	4,000.00	
Des Moines and Fort Dodge Railroad Company	800.00	
Nebraska Central Railway Company.....	99,700.00	
Nebraska Construction Company.....	270,000.00	
Rock Island Coal Mining Company.....	10,000.00	
St. Paul and Des Moines Railway Company	1,000.00	
The Chicago, Rock Island and Pacific Railway Company	2,252.50	
The Rock Island Company, preferred.....	994,330.00	
The Rock Island Company, common.....	61,925.00	
Town and land companies in Kansas.....	207,150.00	
Western Coal and Mining Company.....	36,000.00	
Other stocks	14,900.00	
Total	\$2,306,557.50	
Total bonds and stocks in current assets	\$12,114,288.44	\$10,534,793.32
RECAPITULATION.		
Included in capital assets.....	\$17,837,900.00	\$10,941,126.61
Included in current assets.....	12,114,288.44	10,534,793.32
Total securities owned.....	\$29,952,188.44	\$21,475,919.93

STOCKS AND BONDS PLEDGED AS SECURITY FOR FUNDED AND OTHER FIXED INTEREST BEARING DEBT.

JUNE 30, 1909.

Description.	Deposited with Central Trust Co. of New York, trustee under first and refunding gold bond mortgage.	Deposited with the Bankers Trust Co., New York, trustee under general gold bond mortgage.	Deposited with Central Trust Co. of New York, trustee under gold bonds of 1902 trust agreement.	Deposited with Central Trust Co. of New York, trustee under B. C. R. & N. Ry. Co., consolidated first mortgage.
<i>Stocks:</i>				
Burlington, Cedar Rapids and Northern Railway Company.....	\$7,018,800.00			
Rock Island and Peoria Railway Company.....	1,490,800.00			
The Chicago, Rock Island and Gulf Railway Company.....	385,200.00			
Choctaw, Oklahoma and Western Railroad Company.....	99,550.00			
Searcy and Des Arc Railroad Company.....	409,100.00			
St. Louis, Kansas City and Colorado Railroad Company.....	3,644,800.00			
Kansas City, Rock Island Railway Company.....	39,300.00			
St. Louis, Rock Island Terminal Railway Company	11,300.00			
Gasconade Railway Construction Company.....	50,000.00			
Kansas City and Topeka Railway Company.....		\$2,000,000.00		
St. Joseph and Iowa Railroad Company.....		645,000.00		
Choctaw, Oklahoma and Gulf Railroad Company—common.....			\$9,827,500.00	
Choctaw, Oklahoma and Gulf Railroad Company—preferred.....			6,000,000.00	
Total stocks	\$13,148,850.00	\$2,645,000.00	\$15,827,500.00	
<i>Bonds:</i>				
The Chicago, Rock Island and Pacific Railway Company—General mortgage gold four per cent.....	\$5,000,000.00			
The Chicago, Rock Island and Gulf Railway Company—Main line, first mortgage six per cent.....	3,392,000.00			
Amarillo division, first mortgage six per cent.....	1,900,000.00			
Mexico division, first mortgage six per cent	1,475,000.00			
Burlington, Cedar Rapids and Northern Railway Company—Consolidated first mortgage five per cent.....	6,500,000.00			
Chicago and Southwestern Railway Company—First mortgage seven per cent.....	5,000,000.00			
Chicago, Rock Island and El Paso Railway Company—First mortgage six per cent.....	3,600,000.00			
South St. Paul Belt Railroad Company—First mortgage five per cent.....	200,000.00			
Rock Island Improvement Company—First mortgage gold five per cent.....	2,700,000.00			
The Chicago, Rock Island and Texas Railway Company—First mortgage six per cent.....		\$1,365,000.00		
Cedar Rapids, Iowa Falls and Northwestern Railway Company—First mortgage five per cent. (1881).....				\$2,011,000.00
First mortgage, Minnesota and Dakota division, five per cent. (1884)				3,605,000.00
Cedar Rapids and Clinton Railway Company—First mortgage				1,200,000.00
Chicago, Decorah and Minnesota Railway Company—First mortgage				348,000.00
Iowa City and Western Railway Company—First mortgage				584,000.00
Total bonds	\$29,767,000.00	\$1,365,000.00		\$7,748,000.00
Total stocks and bonds.....	\$42,915,850.00	\$4,010,000.00	\$15,827,500.00	\$7,748,000.00